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Nov. Output 22% Ahead of '33

Dec. to Show Bigger Gain; Change-Overs Cause Delays

by Athel F. Denham
Detroit Editor, Automotive Industries

November output of members of the Automobile Manufacturers Association was 76,800. Since the principal non-member, Ford, was changing over during the month, the AMA figure also approximates the industry total for the month and represents a gain of 22 per cent over November, 1933.

Several plants fell short of scheduled production of new models toward the end of the month. Almost three-quarters of the entire November production, as a matter of fact, was accounted for by Chevrolet with both Plymouth and Ford as well as others at low points while changing over.

Delays in getting new model production under way, due particularly to last minute changes, have reduced estimates for December from the previous 125,000 to somewhat under 120,000. This estimate, of course, is based on schedules that are still tentative and the final figures may vary in either direction. It is regarded as unlikely, however, that they will exceed 125,000.

Nevertheless December output will better 1933 figures by a considerable margin, since last year in that month the industry built less than 85,000 units. It seems almost certain that production by most companies in the absence of labor disturbances and in spite of current delays, will start the new year in much better shape than was the case a year ago.

Domestic retail passenger car sales in October had a list price value of $88,100,000, a loss of 11 per cent from September but a gain of 2 per cent over October, 1933, it is estimated by *Automotive Industries*. The October estimate has been adjusted for clean-up price reduction in effect on the majority of lines in that month.

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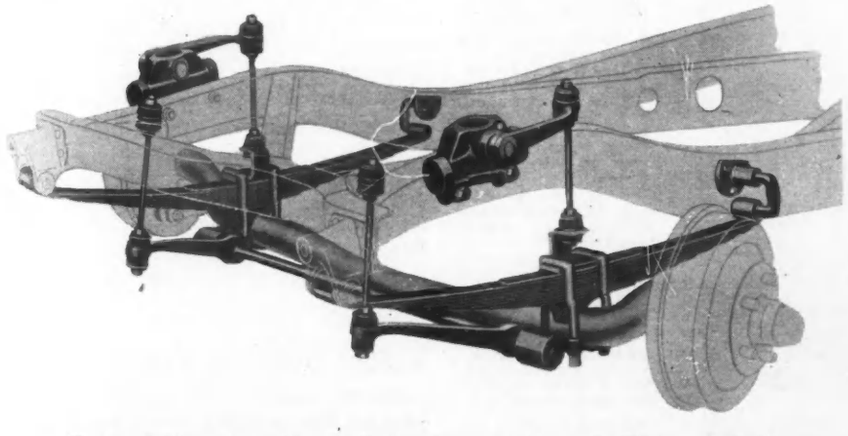

Plymouths for 1935 will use this front suspension embodying relatively soft semi-elliptic springs. See page 692

Four Dealer Councils to Meet With GM Exec. Comm.

Alfred P. Sloan, Jr., president of General Motors, announced this week that he is organizing four dealer councils representing a similar number of geographic regions to bring into the corporation's councils "as affecting its major policies, particularly with respect to distribution, the thinking of its dealer organization as to all problems of which the dealer is a part."

These dealer councils will meet with a group of the corporation's executive committee which determines all basic operating policies. Each council will consist of 12 members who will serve for six months after which a new group will be named. All divisions of the corporation will be represented on a weighted basis.

The four regions from which councils will be named are roughly the northeast, the southeast, the Pacific coast, and the area west of the Mississippi and east of the west coast states.

Industry Capital Probe Not Planned

Subject Is Incidental to Employment Investigation Henderson Informs "AI"

WASHINGTON, Dec. 6—NRA will hold a public hearing in Detroit Dec. 15 and 16 in connection with the investigation of automotive employment it is making at the President's direction, Leon Henderson, chief of the Planning and Research Division, who is directing the study, announced this week.

Stating that his replies to questions at a press conference held on Monday of this week had been misinterpreted, Mr. Henderson told *Automotive Industries* today that no investigation of automotive capital structures, profits and dividends is contemplated and that, if these matters are touched upon at all, it will be incidental to the main pur-

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Houde Prosecution Gets Underway as Government Files Bill of Complaint

WASHINGTON—The Department of Justice "went to bat" on the Houde case last Friday when it asked for an injunction in a bill of complaint filed in the United States District Court in Buffalo. Universally accepted as a test of majority rule in collective bargaining, the Department has announced its purpose to speed action on the case in which it charges Houde with violation of Section 7a of the NIRA and of the APEM code.

The bill asks the court to direct Houde to meet and bargain with representatives selected by the United Automobile Workers Federal Labor Union No. 18,839, affiliated with the American Federation of Labor, as the exclusive bargaining representatives of all or any group of Houde's factory employees concerning matters of wages, hours and basic working conditions, and to endeavor in good faith to reach an agreement whenever the union demands such a meeting and bargaining.

The bill also asks that Houde be restrained and enjoined from bargaining with any other person or organization other than the Federal Labor Union representatives on wages, hours and basic working conditions. In addition, the court is asked to enjoin Houde from interfering with employees in their self-organization and in the selection of their bargaining representatives.

Since the bill is printed in full elsewhere in this issue, it need only be summarized here. Briefly it asserts that there is an emergency burdening and obstructing interstate commerce and in order to relieve this situation Congress passed the Recovery Act including Section 7a which was designed to promote industrial peace. The bill further declares that Houde is engaged in interstate commerce and alleges that its refusal to abide by the NLRB majority rule order will interfere with such interstate commerce by inciting labor disturbances. The bill then gives a history of the case, including the election won by the union, the orders of the old National Labor Board and the present National Labor Relations Board, and the company's refusal to abide by the rulings of these boards.

Organized labor has joined in the action as a "friend of the court" and apparently proposes to see to it that the Department of Justice proceeds vigorously with its complaint asking for a court order requiring the company to meet and bargain with the Federal union "and endeavor in good faith to reach an agreement; and be enjoined from meeting and bargaining with any other person or organization."

Union officials, through Attorney Charlton Ogburn, expressed some concern lest the government had left a loophole in its bill. The bill recites that the Federal union representatives had presented themselves to the company and demanded that the union be recognized as the only representative entitled to bargain collectively "for all or any group" of the employees. Union officials have objected to the phrase "or any group" as offering a possible loophole and Mr. Ogburn said he would prepare a brief for the American Federation of Labor and seek a "broader" order directing recognition of the majority union as the exclusive representative for all workers employed by the Houde company.

Both the Department of Justice and Labor Board officials discounted the union attitude. It was pointed out that the bill itself asks that the company be enjoined from meeting and bargaining with any other person or organization other than the Federal union and that obviously the union would not bargain for any group other than its own. The union officials seemed to think, however, this latter sort of bargaining would mean recognition of the right of minority representation.

Efforts to speed the Houde case are being made by Robert B. Watts, special counsel for the National Labor Relations Board, who has been consulting with the district attorney's office in Buffalo.

First '35 Willys Off Line Christmas Eve

First of the new Willys 77-A model will be off the production line Dec. 24. According to David R. Wilson, receiver, the schedule for operations of all departments shows increments added almost daily with a large group of departments to go into action Dec. 17. The final car assembly line is scheduled to start Dec. 20. About 2500 men will be employed by Christmas on this schedule.

The model has been changed to raise the hood slightly giving appearance of greater length to the car. Engine and other specifications remain practically the same. The 15,000 car production is expected to keep the plant busy on the limited schedule until June.

Chevrolet Recalls 1500 Men; W-O Adds Workers

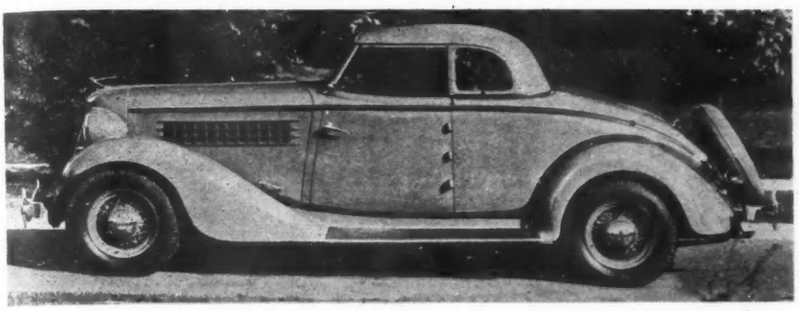
Chevrolet has recalled about 1500 workers at its Toledo plant after a brief shut-down for inventory. New schedules for transmissions for the 1935 Chevrolets started this week.

At the Willys-Overland plant workmen are being added at the rate of about 100 per day to carry through the production schedule of 15,000 units allowed by the recent court order. Present plans call for 2500 workers on the factory payrolls by Christmas.

Spicer Building Warehouse

Spicer Manufacturing Corp. has awarded the contract for a new warehouse which will provide 8000 sq. ft. additional space.

Big Douglas transport plane built for Cities Service Company which was styled by Henry Dreyfuss, well-known industrial designer. The interior comprises a lounge seating 11 people, a conference room for four, galley, lavatory, and pilot's quarters. The exterior of the plane is finished in silver with the green insignia of Cities Service on the nose. The lounge is equipped with two-way telephone and built-in radio. The floor is covered with brown carpet; ceiling is of tan fabric; paneling between windows as well as the curtains are in green. Metal accessories and trim are in gun metal finish. Individual reading lights are set in the ventilating duct along the sides. Three central ceiling lights supply the general illumination



This hard-top coupe, built on the six-cylinder Auburn chassis, is an addition to the Auburn 1935 line, and the same body type is available on the eight-cylinder chassis. A rumble seat is available if desired.

Try Battery Man on Code Wage Violation Charge

Whether an employer paying less than code wage minimums on the ground that to pay more would put him out of business, is guilty of a misdemeanor, is up for determination this week by a jury in a Federal Court in Harrisburg, Pa. The defendant is Fred C. Perkins, York, Pa., battery manufacturer, employing about 20 persons at 25 cents per hour instead of the 40-cent code minimum. The employees are not protesting the wages, the complaint against Mr. Perkins coming from his competitors, it is reported. The case obviously is of far-reaching significance since it involves the government's power to make the penal sections of the Recovery Act stick in minimum wage cases.

All Graham '35 Models to Feature Safety Glass

All new models of the Graham car, to be first exhibited at the automobile shows in January, will feature safety glass in all windows, according to Robert C. Graham, executive vice-president of the corporation.

It was indicated that this and other safety features will be included in a new Six which, it was reported, will be the basis for an aggressive campaign by Graham in the lowest-price field.

Marshall, Lamareux Head New Pontiac Departments

With the separation of parts and accessory merchandising from dealer and customer service, A. W. L. Gilpin, vice-president and general sales manager of the Pontiac Motor Company, appointed L. K. Marshall general service manager, and C. A. Lamareux parts and accessory manager. Mr. Marshall formerly was in charge of the combined department, while Mr. Lamareux was his assistant.

As assistant under the new form of organization, Mr. Marshall will have J. H. Otis, whose title will be assistant service manager. Mr. Otis has been regional parts and service manager of Pontiac in charge of Mid-West region, and located in Chicago. The assistant parts and accessory sales manager will be G. W. Burrage, formerly regional parts and service manager in charge of the Atlantic region, with headquarters in New York.

Nash Plans Mammoth Christmas Broadcast

With a cast of 300 artists headed by Lionel Barrymore in the Dickensian character of Scrooge the Nash Motors Co. will go on the air Christmas Day with a broadcast of approximately three hours. This broadcast will be the preparatory step to the introduction of the 1935 Nash models. Another program of the same proportions will be presented New Year's Day. While the exact time of the broadcasts has not been definitely fixed, it is expected they will start about 2.30 p. m., coming over the Columbia Broadcasting System, utilizing 100 or more stations.

Sealed Power Ring Corp. Opening Canadian Plant

The Sealed Power Piston Ring Corp., Muskegon, Mich., is reported to be opening a plant at Windsor, Ont. Production, it is said, will commence immediately after the first of the new year.

Supplementary Code For Automotive Shop Equipment Industry Approved

To become effective Dec. 10, the National Industrial Recovery Board has approved a supplementary code for the automotive shop equipment manufacturing industry, a product group of the automotive parts and equipment manufacturing industry. The supplementary code adopts the labor provisions of the basic code, which provides a 40-hr. work week and a minimum wage of 40 cents an hour.

Five divisions are set up within the automotive shop equipment group. They are: (1) Air compressors of 10-hp. and under and tire deflating devices; (2) car washers; (3) brake service, chassis frame and wheel aligning equipment; (4) heavy equipment; (5) motor rebuilding equipment: Each subdivision is to have a member and an alternate member of the group's administrative committee. The NIRB may appoint one non-voting administration member of the administrative committee.

The administrative committee is to administer the fair trade practice provisions of the supplementary code, and the basic code provisions which the group's rules supplement. The committee also is to formulate a cost finding method to be used "to the extent found practicable" by the group.

Fair trade practice rules in the supplementary code forbid destructive price cutting and provide that the NIRB may declare an emergency and set stated minimum prices on specified products during the emergency. Other rules forbid selling or shipping on approval; liquidation, purchase or acceptance of another member's product from any buyer; sales on consignment or on accounts carried indefinitely on the seller's books; shipping of merchandise "without an order or without approval or the knowledge of the reseller under the guise of its being supplied as a sample to be examined"; acceptance of returns of obsolete products.

The administrative committee is to formulate a system of classification of customers. This system is to be made available to all members of the product group. The supplementary code specifies that any member "may at all times classify his own customers in accordance with his own judgment."

The supplementary code requires open filing of price terms. A maximum discount of 2 per cent for payment by the tenth of the month is provided.

"The administrative committee shall proceed to establish, after a survey of the practices now in existence in the various subdivisions of this group, and subject to the approval of the code authority and the National Industrial Recovery Board, a plan for deferred payment sales and, when established, no more favorable terms than provided for in this plan shall be allowed by any member of the respective subdivisions," says the code's section on sales terms.

The industry manufactures automotive machine tools and automotive apparatus used principally for reconditioning automobiles and automobile engines. The group's supplementary code was submitted by the code authority of the automotive parts and equipment manufacturing industry, representing approximately 75 per cent of the industry's sales volume and 70 per cent of its members.

Plymouth Drops Independent Front Springing for Soft Semi-Elliptics

Plymouth is dropping independent front suspension and is reverting to a tubular front axle with semi-elliptic springs. Weight has been redistributed on an approximately 50-50 basis by moving the engine forward and undoubtedly the body is being moved forward accordingly.

The new front springs are normal in length, but are quite soft with a frequency of about 90 per minute. This soft spring design has been made possible, it is said, by the development of a new spring steel alloy called "Mola" steel with a markedly higher tensile strength so that an ample safety factor is provided for the high stresses that have formerly militated against the adoption of soft leaf springs at the front end.

An unusual characteristic of the front springs is that the second leaf—which wraps the spring eyes with a complete wrap—is split to either side of the center U-bolt to allow for relative movement of this leaf. This leaf, as well as all other leaves at their outer ends, are tapered to reduce load concentration at the leaf ends.

The suspension includes double-acting shock absorbers and in addition a side-sway or body-roll torque rod is provided at the front end. Similar to anti-roll devices used on the rear ends of some 1934 cars, it differs in detail. The torsion rod itself is not mounted in the frame but is located at the axle with arms running forward and linked from the forward ends to the frame horns. The links apparently are provided at both upper and lower ends with rubber washers evidently to absorb minor road irregularities without producing any action in the torque rod, thereby keeping maximum spring softness for boulevard riding. With large opposed deflections of the front wheels, of course, the action of the torque rod is to increase the effective spring rate and springing stiffness at the front end thereby further reducing stresses on the main springs.

Photographs of the new suspension received too late for publication, also show that forced draft generators are being used on the new Plymouth.

Highway Users Advise Separate Bus Control

That buses be dealt with in a separate measure in whatever proposals for additional Federal regulation of highway transportation are submitted to Congress, is recommended in a resolution adopted by the Advisory Committee of the National Highway Users Conference.

On truck regulation, the Committee said: "So far as operation of trucks engaged in interstate commerce is concerned, the Advisory Committee of the National Highway Users Conference views with interest the operation of this industry under the present Code of Fair Competition which governs it. The Committee recommends that any additional Federal regulation of highway freight transportation be deferred until such time as experience under the present Code indicates the desirability and feasibility of some other type of regulation."

AFL Plans Mass Meetings

The American Federation of Labor is now arranging plans for a series of mass meetings of automotive workers in those cities where the industry is strongest, according to F. J. Dillon, A. F. of L. organizer in Detroit. William Green, president of the A. F. of L., is expected to address the meetings.

Want All Commercial Body Makers Under Same Code

An amendment to the commercial vehicle body code proposed by the code authority would make bodies manufactured by or sold to the manufacturer or assembler of motor vehicle chassis, subject to the provisions of that code, by deleting the language which now excepts such bodies.

Sun Makes 5000-Mile Run To Popularize "W" Oils

The Sun Oil Company has just completed a 5000-mile road test under AAA supervision using a single filling of 20W Sunoco oil under moderate temperature conditions, operating the car at an average speed of 42 mph. throughout the run.

The car, driven by Louis Chevrolet, finished the run in mild weather without a change of oil. The engine when torn down showed less than normal wear. Oil consumption was better than usual with the oils ordinarily used.

Starting with a crankcase charge of exactly 5.15 quarts, it was found at the end of the run that 1.47 quarts remained in the crankcase. This indicates a total consumption of 3.68 quarts or an economy of 1360 miles per quart, which is higher, on the average, than the usual experience with the heavier lubricants ordinarily used.

This test, under strict supervision of the AAA, should help to remove any further doubt that may exist in the minds of engineers and the motoring public as to the virtues of the new winter oils of the quality of the test oil.

AMA Discusses Job Reserves at Meeting

Employment stabilization and unemployment insurance were discussed at a meeting of the executive committee of the Automobile Manufacturers Association, held in New York on Wednesday of this week.

The AMA directors are scheduled to meet Tuesday, Dec. 11, in Detroit.

Graham to Introduce New, Low Priced Six

The Graham-Paige Motors Corp. will introduce a new Six in 1935 priced, it is said, on a competitive basis with cars in the lowest price class. Graham also will offer three other models next year, including the Supercharged Eight.

Rome C. Stephenson

Rome C. Stephenson, a member of the Studebaker stockholders committee, and a former president of the American Bankers Association died suddenly at his home in South Bend Tuesday afternoon.

Nine Independents Average 1.8% Return in 5-Yr. Period; GM-Chrysler Earn 12.7%

Net Earnings as a Per Cent of Net Worth*

	1929	1930	1931	1932	1933	Five-Year Average
			Per Cent	Per Cent	Per Cent	Per Cent
General Motors-Chrysler	26.7	15.3	10.2	—1.3	10.6	12.7
Nine Independents°	14.1	11.7	7.3	3.6	1.4	8.6
Total—11 Companies	24.4	12.5	6.7	—3.5	7.0	10.1
Dividends as a Per Cent of Net Worth*						
General Motors-Chrysler	17.9	15.0	15.1	7.7	7.5	12.8
Nine Independents°	14.1	11.7	7.3	3.6	1.4	8.6
Total—11 Companies	16.8	14.2	13.2	6.8	6.3	11.8

* Net Worth as used here is capital and surplus less intangibles.

° Auburn, Graham, Hudson, Hupp, Mack, Nash, Packard, Reo and White. Comparable data are not available for Ford. Studebaker data not complete for period.

SAE Staging Sectional Meeting in Hartford

With the slogan "We're bringing the S. A. E. to you!", a new type of meeting has been arranged by the Society of Automotive Engineers to be held at the Bond Hotel, Hartford, Conn., December 14.

Invitations have been sent to members residing in the states of New York, Connecticut and Massachusetts who are not able to attend regularly the meetings of the New York and Boston sections. If this first regional meeting proves successful others will be held at regular intervals.

Speakers include D. G. Roos, chief engineer of the Studebaker Corp. and president of the S. A. E., and William B. Stout, president of the Stout Engineering Laboratories, and nominee of the S. A. E. for its president next year.

Other speakers will be John A. C. Warner, secretary and general manager of the S. A. E.; Robert Insley, research engineer, United Aircraft Co., vice-president of the S. A. E., representing aircraft-engine engineering, and C. B. Whittelsey, vice-president of the Hartford Chamber of Commerce, past-treasurer of the S. A. E.

Chevrolet Separates Parts, Service Sales

Increased activity in service sales promotion by Chevrolet is forecast by an announcement this week of a split-up in the factory field organization. Under the new set-up, there will be separate field staffs handling parts and accessory sales, and service. The former will continue under the direction of M. D. Douglas, who has been Chevrolet parts and service manager, while C. W. Wood has been named manager of the service and mechanical departments.

Four new parts and accessory warehouses were added recently at Detroit, Chicago, San Antonio and Portland, Me. The Tarrytown warehouse has been transferred to Bloomfield, N. J. A total of 41 warehouses for parts and accessories are now in operation.

* * *

The Chevrolet release does not indicate what Mr. Douglas' new title is nor in what manner the two separate departments are related; nor could any information on this subject be obtained from Chevrolet officials. It will be remembered, however, that Mr. Douglas, in addition to his title as Chevrolet parts and service manager, has also been vice-president and general manager of the General Motors Part Corp., a company formed about a year ago, but never brought into active operation.

Since Chevrolet is the second GM unit to separate its service and parts and accessory activities, Pontiac having made a similar change recently, these two moves are occasioning some speculation as to whether they are forerunners of further separations of parts and accessory sales from service, and the placing of the former in a central corporation in somewhat the same manner as Chrysler handles all parts sales for all lines through Chrysler Motor Parts.

Leon Henderson,
chief of NRA's planning and research division, who has scheduled hearings for Detroit, Dec. 15 and 16, in connection with the inquiry into automotive employment

DeSoto Adding New Car Priced Under Airflows

A line of lower-priced DeSotos will be added to the Airflow line for 1935, Byron C. Foy, DeSoto president, revealed this week. While the new cars will embody some of the Airflow characteristics, they will be more conventionally styled. The addition of the new line will give DeSoto dealers a more even coverage of the market by filling in between the Airflows and the Plymouth.

Hupp Foreign Tie-Up Off Report Indicates

New Car Development Continues; Cash Position Improved, Andrews Says

Negotiations with a foreign automobile manufacturer by Hupp executives looking toward a working agreement in connection with a new car planned by that company for introduction at show time have been broken off, it was learned upon the return to this country of A. M. Andrews, chairman of the Hupp board.

The development has not, however, changed the company's plans for new car development work on which it is going ahead. The new model, or models, will not conflict with present lines, but will be in addition to present offerings, it is reliably stated.

In a talk with an *Automotive Industries* representative in Detroit, Mr. Andrews said that since Sept. 1, Hupp's cash position has been improved to the extent of close to $1,000,000. Half of this is represented by the release to Hupmobile of $500,000 previously tied up in suits, while the other half reflects improved conditions in the liquidation of inventories. November sales and shipments, according to Mr. Andrews, were the largest in a considerable period of time.

Hupmobile factory officials reveal in amplification of this statement that factory sales for November were the best of any November since 1929, and the third best month of the current year. Of the cash improvement already mentioned, over $115,000 has been added during the last three weeks since a Hupp statement indicated a net improvement of $785,000.

Chrysler Corp. Ships 541,214 in Eleven Mos.; Report 400,000 Plymouth '35 Goal

Eleven months' shipments by divisions of the Chrysler Corp. show a net gain over the same period in 1933 of 22 per cent with 541,214 cars and trucks as against 442,174 in the same period last year.

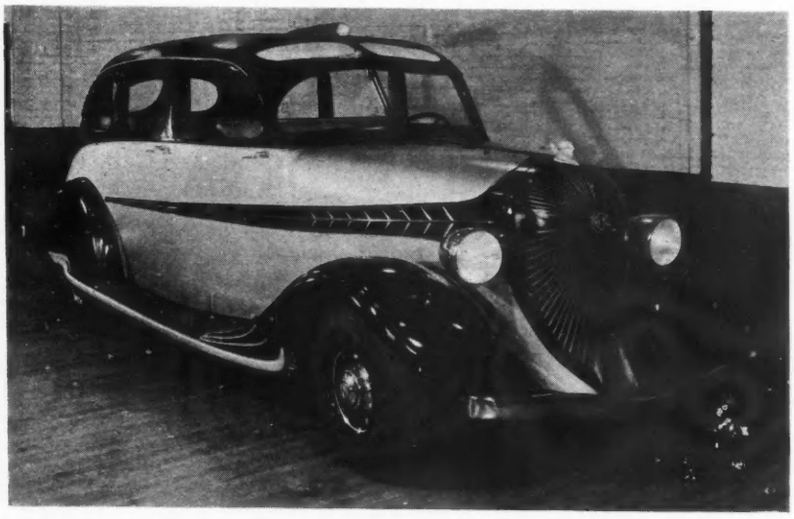
Of this total Plymouth shipped 325,772 cars against 258,980 in the first 11 months of last year, a gain of 26 per cent.

* * *

Plymouth's increase will be widened, it seems almost positive, by the end of December since schedules for this month should raise the 1934 total for that division to around 360,000 units or better, as compared with 261,088 in the entire year of 1933.

Furthermore Plymouth dealers report that the goal for 1935 has been set roughly at 400,000 cars. This leads to an interesting speculation regarding potential expansion requirements of Plymouth whose production has been gaining steadily since 1930, a year after the new Plymouth plant was built. In that year 72,948 cars were built, followed by roughly 110,000 in 1931, 125,000 the next year, and 261,000 in 1933.

Assembly lines have been added in the Plymouth plant gradually until capacity was pushed up to a maximum of around 40,000 cars monthly. Although 45,000 cars have been built by Plymouth in one month, that situation was really abnormal. If Plymouth achieves its reported goal of 400,000 units next year, plant expansion will be in order and it is not unlikely that this may take the form of expanding into assembly plant operations as an alternative to increasing the capacity of the central factory.



A taxicab design intended to give maximum booking appeal which has been copyrighted by Hal. Holtom of Detroit. Among its features are a transparent roof inset for sight-seeing, air seat and back cushions, interior finished in black and silver bakelite, and concealed lights in the radiator shell giving the effect of illuminated grill bars.

Willys Visits Factory; Approves 1935 Model

John N. Willys, founder of the Willys-Overland Co., visited the Toledo plant of the company last week and after examining the 1935 models of the Willys 77 approved the changes made in the new model. Accompanying Mr. Willys on his visit was C. O. Miniger, chairman of the Auto-Lite board, who served as chairman of the Willys-Overland executive committee before the company went into receivership.

Mr. Willys said he believed the concern was "a few years ahead of the times" in presenting the new Willys-Overland vehicle. The company, he said, felt a large percentage of the country's buying population would be looking for a car embodying savings both in first costs and operation. But the trouble, Mr. Willys said, was that this portion of the buying public was in no position to purchase cars at the time the 77 was introduced.

Studebaker Dealers Told of '35 Plans at Meeting

The advertising and sales promotion programs prepared for Studebaker for 1935, and the projected reorganization of the corporation were explained to a conference of dealers and salesmen held at the Studebaker headquarters in South Bend last week. More than 2000 members of the sales organization attended the meetings.

Paul G. Hoffman, trustee of the corporation, was the principal speaker. Other home office officials who participated included Harold S. Vance, another trustee; George D. Keller, general sales manager; D. G. Roos, chief engineer; Louis K. Manley, manager of branches, and Ottis Lucas, sales promotion manager. The reorganization plan was outlined by John Fennelly, representing Filed Glore & Co., one of the investment banking houses underwriting the reorganization. A. O. Deitz, New York, president of the Commercial Investment Trust Co., financiers of wholesale and retail business for Studebaker, also addressed the men.

In order that delegates to the conference could lunch and dine together, and thus save time, a large cafeteria, utilizing 16 kitchen units, each equipped with an open grille, gas stove and large coffee urn, was set up at the factory.

Sept.-9 Mos. Gasoline Consumption Increased

A small but appreciable increase in gasoline consumption for September of this year and the Jan.-Sept. period of 1934 over the corresponding periods of 1933 is reported by the American Petroleum Institute in its November *Statistical Bulletin*. September total consumption was 1,496,524,000 gallons against 1,439,436,000 gallons for the same month one year ago. The total change for the month under review from the corresponding month of last year was 57,088,000 gallons, a 3.97 per cent increase.

The nine months' total consumption for the current year was 12,382,083,000 gallons against 11,631,092,000 gallons for the same period of last year, an increase of 6.46 per cent in daily average consumption.

Steel Price Change Agitators Active

General Opinion, However, Is That No Revision Will Be Made for 1st Quarter

Although the first quarter of 1935 is more than three weeks away, and it is generally assumed that no price changes will be attempted for that delivery period, voices are already being heard in the steel market that price revision must precede the booking of second quarter 1935 business. Recovery from the depression lows of last year has by no means been uniform in all steel products, and some descriptions are selling out of line with others. Moreover, rolling mills which must buy their semi-finished steel supplies in the open market complain that prices for sheet bars and billets have not been adjusted to the prevailing market for finished flat steels, and that the spread between semi-finished and rolled steel descriptions yields inadequate compensation for the rolling conversion.

A more radical making over of the steel market's price structure may be forced upon the industry by reason of administrative action as the result of recommendations of the Federal Trade Commission and the National Recovery Administration with reference to the basing point system. The Federal Trade Commission, it is reported, advocates steel prices, f.o.b. mill, plus actual freight to destination. Sponsorship of the Iron and Steel Industry's Code by the Recovery Administration indicates that it will not want to see it upset by the elimination of the basing points that are an integral part of the Code, although minor changes may be suggested by that body.

Meanwhile, support from motor car manufacturers and parts makers continues to be the outstanding cause for further moderate gains in the rate of steel mill operations. The American Iron and Steel Institute reports operations for this week at 28.8 per cent of ingot capacity, the highest figure since mid-July.

Aluminum—A deadlock between smelters of secondary aluminum and those who supply them with scrap has ensued over prices for the latter commodity. One smelter is reported to have withdrawn from the market, claiming that at the prices which scrap dealers ask smelters simply cannot operate and make both ends meet.

Copper—A meeting of foreign copper producers is to be held at London in January, and owners of North and South American properties may meet in New York simultaneously, the objectives of both meetings being control of output and markets. The "Blue Eagle" price continues at 9 cents, delivered Connecticut. The ingot brass and bronze idustry has adopted standard specifications for price-filing purposes, effective Dec. 3.

Tin—Easier conditions in the Sterling exchange market caused Straits tin to be offered early this week at 50.95 cents, ¼ cent per pound lower than at the preceding week's close.

Chick Touring Country Holding Sales Meetings

J. C. Chick, Cadillac general sales manager, is making a coast-to-coast trip for the purpose of meeting with Cadillac-La Salle distributors and dealer groups throughout the country. He left Detroit December 1.

Mr. Chick's first meeting with the Cadillac-La Salle groups was at Dallas last Monday. From there he went to Los Angeles for a sales meeting on Thursday. Succeeding stops will be made at San Francisco on Dec. 10; Chicago, Dec. 14; Boston, Dec. 18; and New York, Dec. 19, with the final meeting of the trip in Detroit, Dec. 21.

Auto-Lite Fails to Act On Common Stock Dividend

Although directors of the Electric Auto-Lite Co. declared the regular quarterly dividend of $1.75 per share on preferred stock payable Jan. 1 to holders of record Dec. 15, no action was taken on the common stock.

Improved Business Encourages Faulkner

Roy H. Faulkner, Auburn president, addressed a meeting of Connersville, Ind., business men last week in which he expressed considerable optimism over improved business conditions. Mr. Faulkner told his audience that a survey recently completed by the Auburn organization revealed an unusual upswing toward quality buying, and that increases ranging from 10 to 40 per cent were recorded in more than 20 so-called luxury lines.

Pick Co.'s Blue Eagle Removed by NLRB Order

The Carl Pick Manufacturing Co., West Bend, Wis., makers of automobile parts, has had its Blue Eagle removed by the NRA Compliance Division, acting upon the recommendation of the National Labor Relations Board.

It is charged the Pick organization discharged 11 of its employees last summer for union activity. These workers, it is alleged, have not been reinstated, nor has the company established a perferential list for reinstatement of employees who struck in protest of the company's action.

NADA to Hear Richberg

Donald Richberg, Presidential advisor and executive director of the National Emergency Council, has accepted an invitation to address the N.A.D.A. at the association's annual convention in Detroit, Jan. 14-15. Mr. Richberg's acceptance of the invitation was announced by F. W. A. Vesper, president of the organization.

A new laboratory test set has been developed by the Ford Motor Co. and is being placed in service by Ford dealers throughout the country. It is a combination of testing instruments by means of which numerous tests can be quickly made on the engine and the electrical system. Items which can be checked by means of the set include the oil pressure, compression pressure, ignition efficiency, fuel-pump flow, generator and battery condition, carburetion, lighting current, radio voltage and radio tube activity

Field Men, Dealers See 1935 Pontiacs

Hold Series of Meetings To Display Low-Priced Sixes & Improved Eights

In a series of one and two-day sales conventions which began last Monday the entire Pontiac field personnel and dealer organization assembled in Detroit to view the new low-priced Pontiac Six and the improved Eights which constitute the 1935 line. At the same time the company's sales and advertising programs for the coming year were outlined in detail by company officials.

The vanguard of Pontiac forces which arrived last Monday was composed exclusively of the 200 regional and zone men. They were taken to the General Motors Proving Ground, a few miles from Milford, Mich., where the meeting was held in the large auditorium. The principal talk of the meeting was made by H. J. Klingler, president of Pontiac.

Mr. Klingler said the company had followed the trend of the buyer to the low-priced car, adding that millions of dollars had been invested in new tools and machinery to make possible the production of a quality vehicle at the lowest possible price.

"With more men at work in the plants," Mr. Klingler said, "we are 30 days ahead of last year from the standpoint of the number of cars that will have been built and be ready for sale at the time of our public announcement."

The dealer organization, numbering approximately 1750 persons, has been divided into groups of 250 each. These groups have been arranged by geographical locations and each day brings a new lot to the Pontiac headquarters for the meetings. These dealer meetings are expected to cover a 10-day period.

The first group to arrive came from the Dallas, Oklahoma City, Kansas City and St. Louis zones. These came Wednesday, the second group, composed of the dealers from the Boston and New York zones, and these were followed by those from the Philadelphia, Washington, Charlotte and Pittsburgh zones. Dealers from the Detroit zone which comprises Michigan and parts of Ohio and Indiana are due today. The final three days will bring the dealers from the Cleveland, Cincinnati, Buffalo, Minneapolis, Chicago, Denver, Los Angeles, Oakland and Portland zones.

Cederleaf in Canada

Fred W. Cederleaf, former S.A.E. vice-president for production activity, is now associated with General Motors of Canada, as central standards manager. Mr. Cederleaf is located at Oshawa, Ont.

The Horizons of E

Installment Buying

INSTALLMENT buying, in the eyes of some observers, is characteristic of the more exuberant phases of the business cycle. The abuse of credit, of which installment buying is considered a manifestation, and an exaggerated confidence in the future are both emotional traps preparing the unwary community for the economic retribution which follows.

It is a subject in which the automobile industry is greatly interested. Approximately 60 per cent of all new cars sold are financed on an installment basis. It is likewise important in the distribution of used cars, for which a market must be found in order to maintain the sales of new automobiles. What part of these sales could be financed in some other manner, that is to say, through bank loans or through a scheme of installment thrift such as that used in the accumulation of Christmas funds, it is impossible to say. It is a reasonable, tenable conclusion that a substantial fraction of cars now sold would lose their market if for any reason installment selling were stopped.

The Right to Remain in Business

In this matter the automobile producers find themselves in precisely the same position as numerous other industries which cannot rest their case with the demonstration that a certain practice redounds to their business benefit. In other words, it is not sufficient to be able to say of installment selling that it increases the business of the automobile manufacturer.

It is necessary to justify on broad social grounds every practice which affects the public interest. The manufacturer of sausages and candlesticks can no longer rest content in the knowledge that he makes good sausages or candlesticks and sells them to the public at a price which yields him a fair profit and is reasonable, in view of costs to him and value to the consumer. It is necessary for him to go further and demonstrate that his activities are in the public interest. To express the matter in another way, he must justify his right to remain in business as against the alternative of government operation or total prohibition. Our financial institutions and the utilities are cases in point.

A Hypothetical Case

It is conceivable that some zealous reformer suffering, as most reformers do, from arrested thinking, might develop the thesis that the automobile is an affliction of modern society, a sinister offspring of excessive mechanical progress. He could summon to his brief the truly appalling figures of automobile casualties, the financial difficulties of states and cities attributable in part to the rapid construction of fine highways and the distress of the farmer. He might cite the annual expenditures of the farmer for his car and the obliteration of the horse. The quadrupeds which the automobile and tractor have displaced would consume the total product of 25,000,000 acres of land, equal to the cultivated area of the New England States together with New York, New Jersey and Pennsylvania.

This approach, of course, is unsound in that it ignores entirely the compensating benefits and the fact that all change is painful. Or the approach of the reformer might be on the ground that the industry paid excessive dividends, and accumulated an "anti-social" corporate surplus to the detriment of the wage earners.

Brief Against Instalment Buying

A case has been evolved against installment buying and it is necessary to consider it intelligently. The argument is three-fold. The first is the contention that the use of credit for installment purposes is unsound in that it has a speculative taint and might contaminate the banking system. The argument has much in common with the objection to security loans coming from the same group of credit fundamentalists. These have the English banking conception of a sound loan which is essentially a commodity brokerage loan, i.e., a loan covering the purchase of a lot of goods by a jobber or importer until he disposes of them. Such loans are self-liquidating and sufficiently free from speculative taint to leave the minds of the critics at ease.

Credit Contamination

It is for this reason that the automobile finance companies have never been able to rediscount their paper at Federal Reserve banks or obtain the right of member banks to rediscount installment paper. This attitude on the part of the banking authorities is a bit absurd when it is realized that Farmer Jones can buy a Holstein bull and have the promissory note offered in payment rediscounted at the Federal Reserve bank. Such a use of the proceeds satisfies the fastidious eligibility requirements of the reserve system, while a note whose proceeds were used to enable buyers to acquire automobiles on a partial payment plan fall without the credit pale. Ac-

f Business

by Joseph Stagg Lawrence

cording to the theory implicit in this distinction, the bull is self-liquidating, but the automobile is not.

Element of Risk

The credit theorists who object to a corruption of the system through the admission of installment paper for rediscount ignore entirely another point which is directly related to the soundness of the system and is a consideration which is or should be uppermost in the mind of the practical banker. This is the experience in repayment which the various kinds of bank loans reveal. Brokers' loans, for example, have been severely criticized as a perilous abuse of bank credit. Yet it is doubtful if any bank in recent years has lost a single dollar on such loans. Installment paper bearing the endorsement of a reputable finance company is entitled to similarly high credit rating. As a straight banking risk it rates far above certain others which the Federal Reserve Act approves for rediscount.

Imprudent Obligation

A second point against installment buying relates to the imprudence, from the point of personal management, of assuming a certain, recurring charge against an uncertain income. Here is a wage earner making $25 a week. It is an open question whether that income justifies the purchase of a $500 car. Still more questionable is the assumption of an installment obligation amounting to 20 per cent of his income. How certain can any worker be that his job will last the 12 or 18 months necessary to complete the payments? If his income is interrupted he will lose his car, together with the equity which his periodic payments have purchased. This view is accompanied by the advice that such a worker should first save the amount necessary and then purchase the car. It urges installment thrift instead of installment buying.

Ideal Versus Practical

This is a view which is ideal rather than practical—ideal to the extent that it ignores certain insuperable frailties of human nature. There are thousands of men and women who are congenitally incapable of saving money. To deplore the fault piously gets us nowhere. Such people require an exacting external discipline to force the necessary current self-denial which alone will accumulate the purchase price of a car. Without the whip which a monthly reminder from the finance company and the threat of losing their car provides they would never save the amount necessary for purchase. This is a weakness by no means confined to the working classes. The question at issue, therefore, is not installment buying versus some other ideal method of purchase, but installment buying versus no sale.

Social Aspect

The matter has a higher social aspect. A puritan disposition might contend that an inability to save should be penalized by denial or that the use of a car is an extravagant pleasure. The detached social economists cannot admit these essentially moral considerations. He is interested in the promotion of a higher standard of living. A standard of living may be defined as the sum of agreeable sensations which an individual derives from goods and services during any given period. The automobile is a fixed and essential part of that higher standard which is today the pride of the American. Installment buying permits the attainment of a higher notch of satisfaction for thousands of Americans than would otherwise be possible.

Cost of Instalment Buying

The final point raised by the critic relates to the cost of installment buying. This ranges anywhere from the 9.7 per cent charged on governmentally guaranteed construction loans to the 30 and 40 per cent rates on certain types of clothing sales. It is urged that a man who buys a car financed on a 15 per cent basis must pay $115, where he would only have to pay $100 on a cash basis. This, of course, is true, except that, as pointed out above, there is in most such cases no cash basis possible. The critic makes his comparison with a regular bank loan and sees in the difference between 6 and 15 per cent an exploitation of the innocent.

In the first place, the two loans are not comparable, since one implies a risk and service which the other does not. Secondly, the 6 per cent rate on a bank loan is more apparent than real. Third, there are more than 300 finance companies in the field in competition with each other, so that an excessive charge for the service rendered is highly improbable. Finally there is the fact that it is to the interest of the producers to keep the installment charges at a minimum.

Installment credit is well able to justify itself. Its case has been convincingly made before. Unfortunately, the defense of a social right can never rest on a single demonstration. It must be reiterated continuously—particularly in a democracy.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

Although wholesale and retail trade fell off somewhat last week as a result of the unseasonably warm weather, the upward trend of general business continued. The level of purchases of gift merchandise increased, but the demand for winter goods was not up to expectations. The heavy industries held up well. Steel operations increased for the sixth consecutive week, with the rate the highest since the middle of last July.

Car Loadings Lag

Railway freight loadings during the week ended November 24 totaled 561,313 cars, which marks a decrease of 23,212 cars below those during the preceding week, a decrease of 24,425 cars below those a year ago, and an increase of 67,995 cars above those two years ago.

Rails Buying Equipment

The Association of American Railroads reported that on November 1 Class 1 railways had 3,080 new freight cars on order, as compared with only 127 a year earlier and 2,465 two years earlier. On the same date there were 34 new steam locomotives and 101 electric locomotives on order, as against 1 and 3, respectively, a year earlier.

Food Prices Steady

According to the Bureau of Labor Statistics, the index of retail food prices during the two weeks ended November 6 declined by 0.1 per cent. The current index stands at 115.3, based on the 1913 average as 100, as against 115.6 a year ago. Current average retail food prices are now 8 per cent higher than those a year ago.

Current Production Increased

Production of electricity by the electric light and power industry in the United States during the week ended November 24 was 6.1 per cent above that a year ago. This marks the largest weekly percentage increase above the figure in a corresponding period last year since June, 1934.

Factory Employment Gains

According to the Department of Labor, there was an increase of 3.7 per cent in factory employment throughout the United States during October and a rise of 4.8 per cent in total payrolls. These increases reflect the settlement of the labor disturbances in some sections of the textile industry.

Fisher's Index

Professor Fisher's index of wholesale commodity prices for the week ended December 1 stood at 79, as against 78.9 the week before and 79 two weeks before.

Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended November 28 showed an increase of $1,000,000 in holdings of discounted bills. Holdings of bills bought in the open market and of government securities remained unchanged.

Seek Open Price Filing On Used Fire Apparatus

What amounts to open price filing of maximum allowances on used motor fire apparatus and used motor pick-up street sweepers, is provided for in a proposed amendment to the motor fire apparatus code.

Under the proposal, each member would be given 60 days to file maximum allowances on used apparatus of his own manufacture and at the same time, if he wishes, may file the maximum allowances he will make on used apparatus of other manufacturers. Allowances in excess of the filed figures would be barred and on used apparatus built by other manufacturers on which a member has filed no prices, he may not make an allowance in excess of the allowance filed by the manufacturer thereof. To meet changing conditions, members may file new allowance schedules at regular intervals of not less than three months. If at any time the National Industrial Recovery Board finds that the trade-in allowances, or rules and regulations governing them, are unfair, or unjust, or contrary to the public interest, it may require, after public hearing, the revision, suspension or elimination of such provisions.

Criticisms, objections and suggestions on the proposed amendment should be submitted Deputy Administrator W. W. Rose, Washington, prior to Dec. 20.

Pontiac Promotes Dean

Paul J. Dean has been appointed manager of the business management department of the Pontiac Motor Company, according to A. W. L. Gilpin, vice-president and general sales manager of the company. For the last six months Mr. Dean has been assistant in the department to M. P. Tomlinson, who recently transferred to another division of General Motors.

Studebaker Common Stockholders Form Committee

A committee has been formed to represent the interests of the common stockholders of Studebaker in the proposed plan of reorganization of the corporation to be presented to the United States District Court for the Northern District of Indiana. The chairman of the committee is J. L. van Zelm, vice president of the Bank of New York and Trust Co.

Other members of the committee, which plans a thorough study of the proposed reorganization plans, are Rome C. Stephenson, St. Joseph Loan & Trust Co. of South Bend, and Clinton S. Lutkins, of R. W. Pressprich Co., New York City. Allison Choate, New York, is the secretary, and the counsel is Winthrop, Stimson, Putnam & Roberts. It is reported the committee was formed at the request of several of the larger holders of Studebaker common. Deposits of common stock are not being asked at this time and it is understood common stockholders incur no financial liability in authorizing this committee to act for them.

Recovery Board Approves Battery Code Authority

The National Industrial Recovery Board has approved the following members of the National Code Authority for the Electric Storage and Wet Primary Battery Industry:

E. D. Martin, Emark Battery Division of Thos. A. Edison, Inc.; C. O. Wanvig, Globe-Union Mfg. Co.; L. B. F. Raycroft, Electric Storage Battery Co.; D. A. Graham, Red Bar Battery Co.; and W. J. Sandman, Advance Battery Mfg. Co.

New 1½-Ton Four-Wheel Drive Truck on Market

A new 1½-ton four-wheel drive speed truck, the Model HS, has been placed on the market by the Four-Wheel Drive Auto Co., Clintonville, Wis. It is equipped with a six-cylinder F.W.D. engine said to develop a maximum output of 84 hp. and a maximum torque of 185 lb-ft. By setting the front axle 46½ in. back from the front bumper, the load is substantially equally divided between the four wheels, and the steering is said to be improved. Tires are 6.50-20, duals at the rear. Including the cab, the chassis weighs 5220 lb. and the

gross-weight rating is 11,200 lb. The wheelbase is made to suit the needs of the purchaser. With a wheelbase of 121 in. the free body space back of the cab is 96 in.; with a wheelbase of 132 in. it is 120 in., and with a wheelbase of 142 in., 144 in.

The power of the engine is transmitted to the four-speed transmission through a 12-in. plate clutch, and from the transmission main-shaft level to the center differential, which equally divides the driving torque between the front and rear axles. The center differential takes care of differences in the rotative speeds of front and rear wheels respectively and is provided with a differential lock which can be operated from the driver's seat. Brakes are of the hydraulic type and actuated by a vacuum booster.

The new truck lists at $2400 and is said to mark the company's entrance into the high-speed, medium-light-weight truck fields.

Craftsman's Guild Models Displayed in GM Building

Twenty-four model Napoleonic coaches that won university scholarships valued at $51,000 for their builders in the 1934 Fisher Body Craftsman's Guild competition have been placed on exhibition in the lobby of the General Motors building in Detroit and will remain there for a period of two weeks.

Freedom From Coercive Bargaining Urged In Manufacturers' Recovery Platform

The restoration to industry and labor of their rights to bargain collectively or individually without coercion from any source; avoidance of policies tending to centralize control over industry, labor and agriculture; stability of public finance and return to the gold standard are advocated in the "Proposed Platform for Recovery" propounded by the National Association of Manufacturers and presented to the Congress of American Industry which convened in New York Wednesday and Thursday. The platform denies the efficacy of national economic planning as a means of winning back economic recovery; rakes coercive collective bargaining, and urges prohibition of general or sympathetic strikes in labor disputes.

The platform is concise in its statement that "the power of government should not be used to control local relationships between employees and employers . . . the economic foundation of industrial progress is productive efficiency . . . the attainment of this result requires the harmonious cooperation of labor, management and investors."

Following this general statement of principles the platform urges that the right of men to work be protected; that sympathetic or general strikes, lock-outs, blacklists and boycotts be prohibited; that the government refrain from policies which attempt to force men into labor organizations; that encouragement be given to local settlements of disputes; that every organization of employers and employees be made equally subject to public authority, legally answerable for its own conduct or that of its agents, and equally subject to judicial remedy; that individuals be not deprived of their rights to bargain for themselves, and that politics be kept out of labor relations.

"Management," says the platform, "recognizes that the productivity of the worker should be fairly and even liberally reflected in his compensation." Also it is made clear that it is impossible for labor to share in what is not produced, and that the system of arbitrarily determining hours and wages, such as proposed in the 30-hour bills, ignores this fundamental principle.

In a section devoted to social security the manufacturers' platform proposes that such security be obtained by measures which reduce rather than perpetuate or actually increase unemployment. Such relief measures as will bankrupt the government must be avoided, it is averred. Proposals such as compulsory unemployment insurance or reserves must be founded on principles which will not create further unemployment or make re-employment hazardous, or threaten industry with confiscatory taxes and burdens, thus further delaying recovery or increasing relief and living costs.

Jan.-Oct. New Car Registrations Gain 27% Over Corresponding Months of '33

New Passenger Car Registrations—10 Months

	October, 1934	September, 1934	October, 1933	Ten Months 1934	Ten Months 1933	Per Cent change, 10 Mos., 1934 over 1933	Per cent of Total, First Ten Months 1934	Per cent of Total, First Ten Months 1933
Ford	38,641	41,929	29,011	493,167	272,002	+81.0	28.91	20.29
Chevrolet	38,076	43,003	43,917	472,358	438,903	+ 7.7	27.69	32.73
Plymouth	22,240	24,551	25,422	277,172	218,495	+26.8	16.25	16.29
Dodge	6,918	5,894	8,547	80,675	75,254	+ 7.1	4.73	5.61
Pontiac	4,891	4,697	6,963	66,516	78,764	—15.5	3.90	5.87
Oldsmobile	6,332	6,313	2,825	64,711	32,614	+98.5	3.79	2.43
Buick	5,160	4,566	2,638	54,462	41,328	+31.9	3.19	3.08
Studebaker	3,093	2,554	2,362	36,935	29,198	+26.5	2.17	2.18
Terraplane	3,293	2,642	3,293	36,465	32,978	+10.8	2.14	2.46
Chrysler	2,841	2,195	2,530	24,269	26,678	— 9.0	1.42	1.99
Hudson	1,524	1,247	193	17,375	2,728	+537.5	1.02	.20
Nash	1,132	907	460	12,630	8,704	+45.0	.74	.65
Graham	1,003	865	752	11,619	9,069	+28.0	.68	.68
DeSoto	967	934	2,003	10,242	19,340	—46.9	.60	1.44
LaFayette	1,066	1,038	...	7,642	....	...	.45	...
Willys	420	562	1,016	6,015	13,975	—56.9	.35	1.04
Packard	635	555	893	5,472	8,097	—32.3	.32	.60
Hupmobile	616	572	507	5,251	6,003	—12.5	.31	.45
Auburn	651	641	292	4,703	4,636	+ 1.5	.28	.35
LaSalle	374	370	332	4,543	3,350	+35.5	.27	.25
Cadillac	330	271	286	4,245	3,592	+18.1	.25	.27
Reo	310	289	437	3,358	3,082	+ 9.0	.20	.23
Lincoln	182	171	162	1,777	1,914	— 7.3	.10	.14
Pierce-Arrow	90	103	252	1,531	1,776	—13.7	.09	.13
Continental	7	4	510	939	2,504	—62.6	.06	.19
Austin	61	19	257	875	3,387	—74.2	.05	.25
Franklin	5	6	100	355	1,180	—69.5	.02	.09
Miscellaneous	22	33	115	268	1,474	—81.8	.02	.11
Total	140,880	146,931	136,075	1,705,570	1,341,025	+27.1	100.00	100.00
Chrysler Corp.	32,966	33,574	38,502	392,358	339,767	+16.3	23.00	25.33
Ford & Lincoln	38,823	42,100	29,173	494,944	273,916	+80.6	29.01	20.43
General Motors	55,163	59,220	56,961	666,835	598,552	+11.5	39.09	44.63
All Others	13,928	12,037	11,439	151,433	128,790	+17.5	8.90	9.61

New Truck Registrations—10 Months

	October, 1934	October, 1933	10 Months 1934	10 Months 1933	Per Cent Change 10 Mos., 1934 over 1933	Per Cent of Total—Ten Months 1934	Per Cent of Total—Ten Months 1933
Chevrolet	15,723	10,633	138,292	91,144	+ 51.8	39.39	43.07
Ford	13,544	7,113	113,844	52,356	+117.0	32.42	24.74
Dodge	4,669	4,363	39,728	21,159	+ 87.9	11.31	10.00
International	3,238	3,095	26,421	22,496	+ 17.3	7.52	10.63
G. M. C.	1,106	701	8,809	5,524	+ 59.3	2.51	2.61
Diamond T	535	498	4,770	3,524	...	1.36	1.67
Reo	364	298	4,286	2,515	+ 35.5	1.22	1.19
White	304	124	3,443	1,185	+190.5	.98	.56
Federal	200	159	1,673	1,102	+ 51.8	.48	.52
Mack	146	159	1,616	1,288	+ 25.4	.46	.61
Studebaker	212	149	1,441	1,683	— 14.4	.41	.80
Brockway	118	87	1,064	762	+ 39.7	.30	.36
Autocar	169	94	977	891	+ 9.6	.28	.42
Stewart	52	70	654	587	+ 11.3	.19	.28
Indiana	156	130	630	1,086	— 42.0	.18	.51
Austin	24	82	424	914	— 53.6	.12	.43
All Others	318	303	3,055	3,382	— 9.8	.87	1.60
Total	40,878	28,058	351,127	211,598	+ 66.3	100.00	100.00

Detroit ASME Hears McElwee

At the November meeting of Detroit Section of the A.S.M.E., R. G. McElwee, general manager, Ecorse Foundry Co., presented a paper entitled, "Modern Cast Irons" in which he discussed how modern foundry practice can be utilized to produce cast irons possessing definite physical properties. One of the most important points of the paper was the emphasis upon the use of the electric furnace as a means of better control and the elimination of troublesome variables.

Mr. McElwee made a plea for closer cooperation between the user and the foundry and asked for more detailed information concerning the limiting conditions under which the castings are to be used.

Among those participating in discussion were E. W. Upham, Chrysler metallurgist, and A. L. Boegehold, of General Motors. The latter spoke of the recent successful applications of alloy cast irons in the manufacture of camshafts and crankshafts; also the advantages of high strength cast iron for automobile brake drums. For this purpose he recommended a material with low modulus of elasticity, high combined carbon, very hard, and resistent to wear.

November Output Up 22% From '33

(Continued from page 689)

In the first ten months, sales of pasenger cars in the United States had an estimated list price value of $1,182,000,000, a gain of 35 per cent over the corresponding period last year when dollar volume totaled $876,100,000.

The first six states to report new passenger car registrations for November show a 24 per cent increase over the same states last year.

Pontiac deliveries for the first 20 days of November were 2,857 compared with 2,557 for November of last year.

During the first 20 days of last month Oldsmobile retail sales showed a gain of 143 per cent over the corresponding period of last year. Thus far in 1934 Oldsmobile has sold twice as many cars as were sold in the comparable period of 1933.

Hupmobile's November shipments were the greatest for any similar month since 1926, making last month the third largest 30-day period for the year.

Report of AMA Endorsing Job Insurance Unfounded

Reports that the automobile manufacturers had come out for unemployment insurance, featured in Wednesday's newspapers, are without foundation. Commenting on the reports, Alfred Reeves, AMA vice-president, said: "We cannot understand any basis for the story. For some time we have been studying the situation, but no report has been made as yet to the industry."

Knowlton P. Drysdale

Knowlton P. Drysdale, for many years advertising counsel for the Cadillac Motor Car Co., died Monday at his home. He was 66 years old.

During his early years Mr. Drysdale was interested in the bicycle industry, and was associated with the Marion and later the Waverly Bicycle Companies. He became associated with the Lelands in the Cadillac Motor Co., remaining with them through their period of ownership of the Lincoln Motor Co. He is survived by a daughter, Mrs. Leland V. Hewett, and three grandchildren.

Closer Die Design Cooperation Urged

A plea for greater cooperation between automotive engineers and machine tool manufacturers in the early design stages, was made by Malcolm Clark, Taylor Winfield Corp., in one of three papers presented before the Detroit Section S.A.E. last Monday night. The other two papers were by Jerry Bingham, Toledo Stamping and Manufacturing Co., entitled "Some Fundamentals of Dies and Stampings," and Guy Hartsock, Master Mechanic, Hudson Motor Car Co., who discussed some phases of "Large Dies and Stampings."

Mr. Clark, whose address was entitled "Why Welding," pointed out that once manufacture of dies is started, even in the early stages, it is difficult to obtain engineering changes in design which would permit easier manufacturing.

Industry Capital Probe Not Planned

(Continued from page 689)

pose of the inquiry which is to determine what can be done to provide more stable employment. In this connection, he pointed out that it would be impractical in the time and with the personnel available to make a study of the industry's financial situation.

In response to questions at the Monday press conference regarding the scope of the inqury, Mr. Henderson said that the inquiry would cover "all economic aspects of the industry as well as the labor issues." Since this statement was in response to a question as to whether the inquiry would cover capital structures, profits, etc., it was widely interpreted in the daily press to mean that an expansion of the study to include these financial factors had been determined upon. Apparently, however, these factors will enter into the investigation only in so far as it is necessary to consider them in appraising the economic practicability of proposals for stabilizing employment and increasing annual earnings per worker.

Buick Showings Dec. 15

Public showings of 1935 Buicks are scheduled for December 15. The 1935 models are substantially the same mechanically and in body designs as this year's cars. Some changes have been made in upholstery, appointments and color selections.

Governors to Limit Car Speed Urged Officially

Compulsory installation of a mechanical device on every car limiting its speed to 50 m.p.h. was recommended this week to the Massachusetts legislature by the State Public Works Department.

Ford Adopts E-P Lubes

E-P lubricants have been adopted as standard for the rear axles of Ford cars and trucks, the Ford Motor Co. announced this week.

Canadian Car Dealers Plan Code of Ethics

Would Standardize Used Car Allowances; Propose Changing Seizure Laws

Automobile dealers of Windsor, Ont., have joined with dealers in other Canadian cities in giving their endorsement to a resolution calling for the establishment of a code of ethics for the guidance of the retail automotive business in the Dominion. In substance the resolution, submitted by J. R. Dixon, of Ottawa, proposes the elimination of certain practices deemed unethical in the sale and servicing of new and used cars.

Present plans indicate that the dealers will seek legislation similar to the Ontario Insurance Act to make the proposed code legal, and it is hoped by the sponsors of the movement to procure uniform laws in all the provinces. Also the dealers interested in the movement seek to eliminate inequitable provisions in the federal and provincial seizure laws and modification of the regulations governing issuance of dealers' operating licenses and markers. One of the biggest handicaps, it is pointed out by Mr. Dixon, is the matter of "over allowances" given by some dealers on used cars, and one of the principal objects of the code would be to standardize these trade-in allowances.

Packard Acquires New Factory at E. Windsor

The Packard Motor Car Co. has acquired a factory building in East Windsor, Ont., which, it is said, will greatly increase the company's production facilities. L. L. Roberts, Canadian manager for Packard, said the additional factory space will mean the employment of 150 more skilled workers and considerable additional employment throughout Canada in the dealer and sales organization now being formed. According to company officials the new plant will turn out between 3,000 and 4,000 cars annually specifically for the Canadian, English and Spanish markets. It is anticipated that production will begin shortly after the first of the new year, and while the full Packard line will be included in the schedule, the plant will specialize in the new low-priced car Packard is to introduce.

October New Car Sales Increased

October sales of new passenger cars, trucks and buses in Canada totaled 2,642 with a value of $2,809,351. This is an increase of 540 units over the same month one year ago and approximately a $700,000 increase in value compared with October, 1933. Of the total units 1,946 were passenger cars, 696 trucks and buses.

Canadian exports of automobiles have gained steadily throughout the present year. The ratio of exports to total production for the first nine months of this year was 37.4 per ceut, which is higher than any preceding year back to and including 1929.

Miller, Chrysler, Heads Canadian Advertisers

A. M. Miller, advertising manager for the Chrysler Corp. of Canada, Ltd., Walkerville, Ont., was elected president of the Association of Canadian Advertisers at a recent meeting of the association in Toronto. New directors include W. F. Prendergast, Imperial Oil, Ltd., Toronto; C. B. Watt, advertising manager of General Motors of Canada, Ltd., and Glen Bannerman, Hudson Motors of Canada, Ltd.

Fact Finding Board For Job Insurance Proposed

Before any compulsory scheme of unemployment relief is adopted in this country, it would be desirable for the government to establish a fact-finding body composed of representatives of labor, industry, state and local governments, and the general public, the National Industrial Conference Board suggests in a report issued this week on its investigation of British experience with unemployment insurance since 1911. The report is contained in a 40-page pamphlet entitled "Unemployment Insurance: Lessons from British Experience."

The report points out that in the United States reliable information concerning the extent and nature of unemployment is almost totally lacking. Consequently it would have the fact-finding body it proposes make a thorough study of the facts of unemployment, which facts "would be of inestimable value in acquainting public opinion and the public representatives with the problems that arise in connection with an attempt to provide security against unemployment."

To Survey Legal Aspects Of Compliance Problems

In a further move to effect code compliance, A. G. McKnight, Director of the Litigation Division, has been appointed Special Assistant General Counsel. He will make a nation-wide study of conditions as they relate to the legal aspects of compliance and enforcement. On the basis of this survey, Mr. McKnight will advise and make recommendations to the National Industrial Recovery Board, the General Counsel and the Director of Field Administration and Enforcement on legal procedure for solution of enforcement problems.

CALENDAR OF COMING EVENTS

SHOWS

New York Automobile Show.....Jan. 5-12
Los Angeles Automobile Show.....Jan. 5-13
St. Louis Automobile Show.....Jan. 6-12
Cincinnati Automobile Show.....Jan. 6-12
Washington Automotive Assoc., Automobile Show .....Jan. 12-19, 1935
Toronto, Canada Automobile Show, Jan. 12-19
Newark, N. J. Automobile Show..Jan. 12-19
Buffalo, N. Y. Automobile Show.Jan. 12-19
Cleveland Automobile Show.....Jan. 12-19
Milwaukee Automobile Show....Jan. 12-19
Detroit Automobile Show.....Jan. 12-19
Brooklyn, N. Y. Automobile Show.Jan. 14-19
Philadelphia Automobile Trade Assoc. —Automobile Show .....Jan. 14-19
National Motor Boat Show, New York .....Jan. 18-26
Columbus, Ohio Automobile Show Jan. 19-24
San Francisco Automobile Show.Jan. 19-26
Baltimore—Automobile Show....Jan. 19-26
Boston Automobile Dealers Assoc.— Automobile Show .....Jan. 19-26
Pittsburgh, Pa. Automobile Show, Jan. 19-26
Hartford, Conn. Automobile Show.Jan. 19-26
Syracuse Automobile Show .....Jan. 19-26
Nashville, Tenn., Automobile Show Jan. 20-26
Rochester Automobile Show.....Jan. 21-26
Chicago Automobile Show...Jan. 26-Feb. 2
Montreal, Que., Automobile Show Jan. 26-Feb. 2
Springfield, Mass. Automobile Show, Jan. 28-Feb. 2
Omaha Automobile Show.....Feb. 3-9
Kansas City, Mo. Automobile Show Feb. 9-16
Denver, Colo. Automobile Show..Feb. 10-23
Peoria, Ill., Automobile Show....Feb. 13-17
Bethlehem, Pa., Automobile Show. Feb. 18-23
Evansville, Ind Automobile Show.Feb. 23-27
Minneapolis Automobile Show....Mar. 9-16
Mankato, Minn. Automobile Show Mar. 16-23

MEETINGS

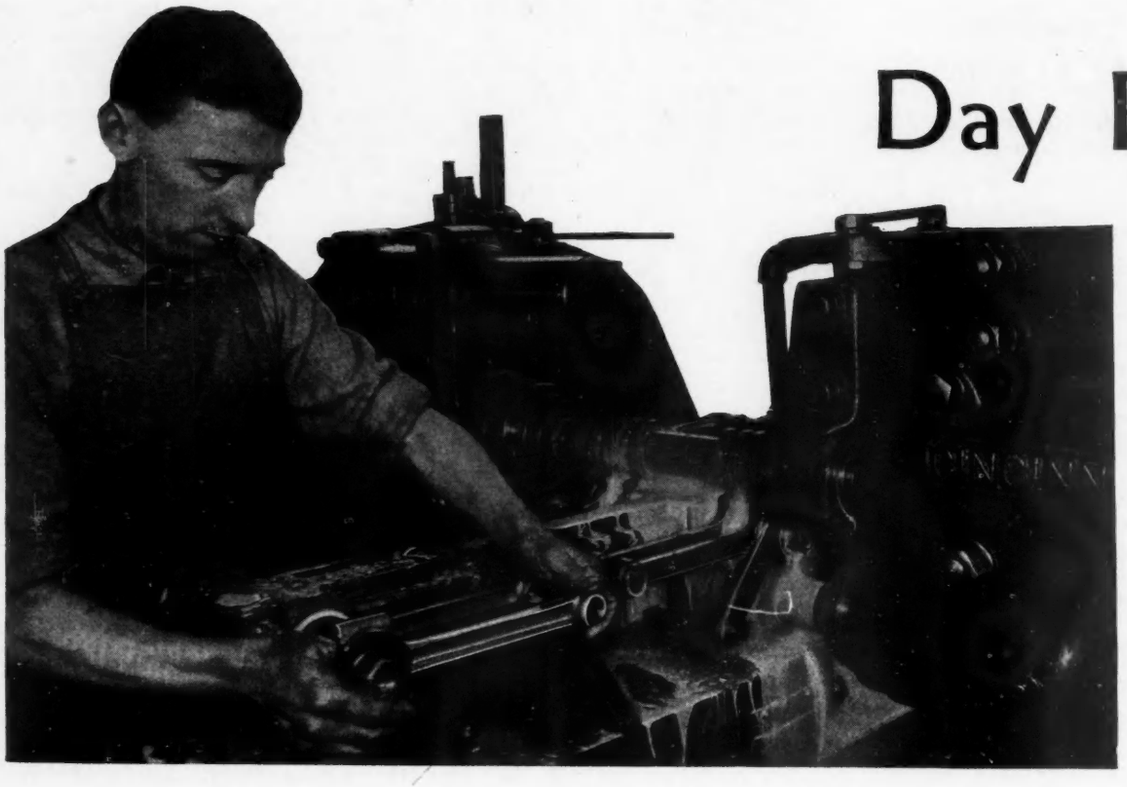
Automobile Trade Association Managers Midwinter Meeting—New York...Jan. 6

ANNUAL MEETINGS

Society of Automotive Engineers—Annual Banquet—New York .....Jan. 7
Motorcycle & Allied Trades Assoc., New York City .....Jan. 9
American Engineering Council, Washington, D. C. .....Jan. 10-12
Society of Automotive Engineers—Annual Meeting—Detroit.....Jan. 14-18
American Roadbuilders Assoc., Washington, D. C. .....Jan. 22-25
Automotive Parts & Equipment Mfrs., Inc.—Chicago .....Jan. 29

CONVENTIONS

National Automobile Dealers Assn., Detroit .....Jan. 14-15



Day Rates S

"HAS the death knell of the group bonus system of factory compensation of workers in the automotive industry been sounded by developments under the NRA?" This question, leading off an article in the March 10 issue of *Automotive Industries*, can now be answered affirmatively, whereas the same answer last March was largely a supposition based on current developments.

Furthermore, even individual bonus systems, such as piece rate compensation, are today beginning to be discarded by many important corporations in the industry.

Initiated by labor, and particularly the A. F. of L., the movement toward straight day-rate wages has gathered a momentum at present which bids fair to carry a major part of the industry with it.

From the management standpoint there is one major reason for this development. Works council sessions in numerous plants have to a large extent been taken up by discussions and arguments respecting wages, efficiencies, adjustment of piece base rates, etc., for various groups in the shop.

Nothing has served better to drive home to management the importance of avoiding all such friction and argument with its workers, individually and in groups, as to what constitutes adequate payment for work performed.

In the old days, certainly, workers generally had no definite idea as to how much they would find in their pay envelopes under the group bonus system. When factories realized that this condition created dissatisfaction—potential nuclei of major labor troubles—attempts were made to post efficiencies and rates daily and weekly to enable workers to compute their own earnings.

The method was not entirely satisfactory. Workers were not able on the whole to use this information correctly. And from the management standpoint it raised the clerical cost of bonus-system administration very materially, without eliminating disputes and dissatisfaction.

The switch to day rates began. Of course, there had always been a number of organizations which had operated on straight day rates. Of these, the most important was the Ford Motor Company. To this small group there has since been added a number of other companies who have made a complete switch. Oldsmobile was probably the first of these.

In other plants, and these are the majority, the switch has been gradual. Whenever discussion came up in the works councils as to compensation for any group or department, that group or department was immediately switched to day rates to avoid further difficulties. The reason for this gradual switch, of course, is that many factory executives have considered that a complete plant switch might create further dissatisfaction in the minds of such employees who might be quite satisfied with the group-bonus method of compensation.

Automobile manufacturers who have largely followed this method include Chrysler Corporation as their most important member.

In General Motors there would seem to be an unwritten policy at least to change as rapidly as desirable to straight day rates. As workers return with the beginning of new model production, more and more are being switched to straight day rates. This includes Chevrolet, Flint and Detroit plants, Buick, and apparently Pontiac.

Fisher body is also reported by workers to be switching to day rates in a number of its plants, with more to follow, probably as activity is resumed, although no definite information on this subject has been revealed by Fisher executives.

With the beginning of new model production Hudson Motor Car Company has also swtiched to day rates in all its plants.

Packard switched to day rates somewhere around last March. No

Supplant Group Bonus

attempt is made here of course to give a complete listing of all companies. As a matter of fact, there is still a small group of vehicle manufacturers who are operating on bonus systems. Graham-Paige is included in this group.

Whether or not they also will make a switch would seem to depend largely on whether the administration during the "production resumption" period works out satisfactorily. It is during this period that most of the labor dissatisfaction occurs, with production necessarily slow since production wrinkles on new models must be ironed out.

Once production picks up in good shape, the effectiveness of bonus systems increases the potential earning capacity of the individual workers. That is the major reason why such a considerable number of plants are switching to day rates as men are being rehired for production of new models, rather than making the switch in mid-season.

Among parts manufacturers the trend has not become as pronounced as yet as in the car plants. Murray Corporation a week or so ago announced that it had switched to day rates. Briggs Mfg. is also reported as making or having made the switch, although official information is lacking.

Parts plants obviously will find it more difficult to make the change, even if considered desirable. Parts plants generally work to much closer schedules than vehicle plants with the hand-to-mouth buying and ordering habits of the vehicle industry. Furthermore, the costing of parts prices involves the vital necessity for close control of piece production costs, particularly in those plants where a variety of sizes and types of parts are produced.

Moreover, group bonus methods of worker compensation have never been as general in parts plants as in car factories. Piece rate has ruled here largely, and piece rates at least had the advantage of making computation of earnings by workers somewhat simpler than group bonus systems. Piece rate pay, however, is open to the same objections by labor during early production days on new model parts with production slowed up by manufacturing changes.

It would not be surprising, however, if additional important parts companies would switch to straight day rates. The matter is certainly under discussion in a good many factories.

What will be the effect of a widespread change in this direction in the automotive industry? Is it possible that some day the industry may return once more to bonus systems? It is too early to tell. Of course one large factor to be considered in answering the question is: How much influence will organized labor continue to wield in future years in this industry? Will its power grow or diminish? The latter seems probable for the immediate future, since "organized labor" includes not only such organizations as the A. F. of L., etc., but also works councils of various types.

If organized labor increases its power there is little likelihood of widespread returns to bonus systems, unless major policy changes are made by such organizations. In the past they have always been backers of the straight day-rate system of compensation, as being simpler for the "organization" to control.

by Athel F. Denham
Detroit Editor,
Automotive Industries

If there is a diminution of power or of organization and regimentation of labor, the question will then be one of pure economics. Will the materially increased supervisory cost necessitated by day rates offset the decrease in clerical work made possible by abolition of the bonus systems? For supervisory costs are increasing, and will continue to increase as the switch is made.

On the other hand, much also depends on the rates of pay adopted. Will the possible dissatisfaction of the more efficient employees with straight day rates more than offset the greater satisfaction of those below normal in efficiency? Already there have been some rumblings among labor at some plants where the switch has been made. While in general the rates of pay for day work are higher than the base under various bonus systems, the potential earning capacity is decreased for the more efficient workman under the day rates set up in some of the plants. It is not unlikely, as a matter of fact, that during mid-season production peaks weekly wages in some companies may be lower under the day-rate system, offsetting the increase during slow periods.

Under day-rate compensation of course, the application in practice of the "merit clause" of the automobile manufacturers' code will be simplified for management. Under the bonus system discharge for inefficiency was not as easy to sustain, since compensation was based on worker efficiency. As long as the worker exceeded the required minimum of production he justified himself economically. Under day rates he is "on the spot."

This becomes of vital importance at lay-off periods with production slackening, and it is quite probable that organized labor, realizing this situation, will redouble its efforts for the elimination of this clause.

Furthermore, the effect of general adoption of day-rate payments will unquestionably result in a decrease by management in its efforts to promote "share the work" plans during slack seasons. As production slackens men will necessarily have to be completely laid off, retaining only those necessary to production requirements.

This in itself would tend to increase fluctuations in employment by individual companies, and certainly would seem to make more important than ever stabilization of production and employment by a better stabilization of consumption of automobiles. That in turn would lead to lower peak employment by the industry, with both its good and bad features.

All of these factors and others will have to be considered eventually. Most important, however, is: "How will the individual worker react?" In the meantime the trend is definite—day rates as the basic method of compensation of labor will preponderantly rule the industry for the near future at least.

Eight Countries S
the Paris A

by W. F. Bradley

Paris Correspondent,
Automotive Industries

MORE international than ever before, the French aeronautical salon comprised planes and engines representing the industries of France, England, Germany, United States, Italy, Czecho-Slovakia, Poland and Russia. The exhibition was held in the Grand Palais, use being made of the decorations placed for the automobile show.

With the opening of the show an announcement was made by the French Government that a prize of practically $700,000 was offered for the plane equipped with a heavy-oil engine, which broke the 10,000 kilometer speed record before the end of 1936. This record, established on a closed circuit by Doret & Le Brix with a DeWoitine, stands at 93.1 m.p.h. A gasoline engine was used. If the engine is built under a foreign license, the prize will be cut by half.

The show revealed very little interest in the heavy oil engine. A Junkers all-metal hydroplane was shown equipped with three two-cycle double-piston Junkers engines. This plane is in regular service in Germany. The Société Lilloise, a branch of the Peugeot organization in France, had a 500 hp. Junkers on exhibition and states that an engine of this type is undergoing official 50-hour tests.

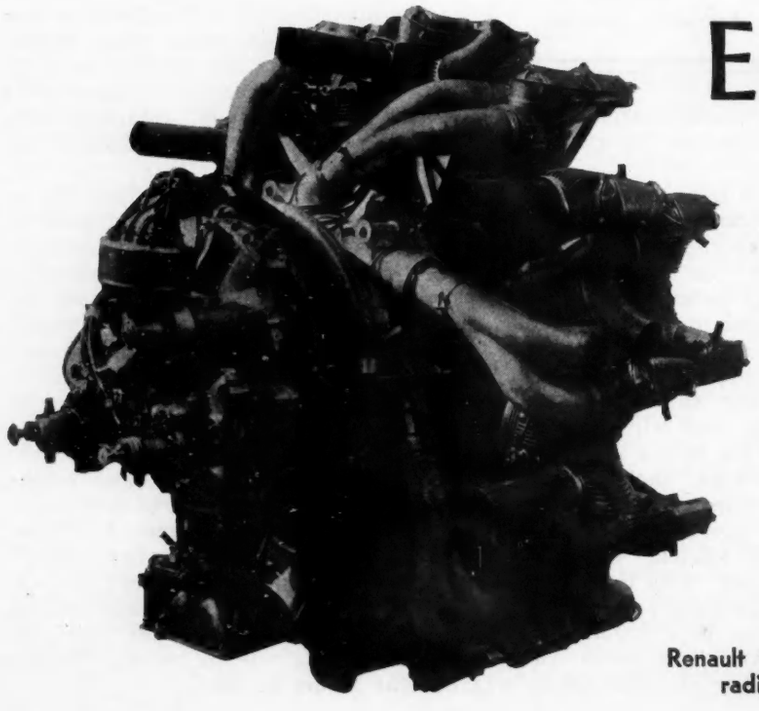
The English Napier Company has taken up the Junker rights and exhibited a six-cylinder job of 4¾ by 8¼ in. bore and stroke, developing 720 hp. at 1700 r.p.m., this corresponding to a propeller speed of 1179 r.p.m. It is stated that the British Air Ministry is particularly interested in this type of engine for troop carriers and long distance bombers.

The Salmson Company had on view a radial water-cooled Diesel built under Szydlowski license. The cylinders are mounted around the crankcase in nine branches, each branch having a pair of cylinders, with a total bore of 118 mm., the displacement of each pair of cylinders being 200 cu. in. The compression ratio is 16 to 1, and the power developed is stated to be 600 hp. at 1600 r.p.m. A centrifugal blower running at 13,500 r.p.m. is made use of. There are nine injection pumps, and starting is assured by compressed air. This engine does not appear to have undergone official tests. The only other heavy-oil engine in the show was an Isotta Fraschini converted to the Brandt-Bagnulo system of injection. The Bristol Co. announces a 9 cylinder air-cooled radial, but it is not exhibited.

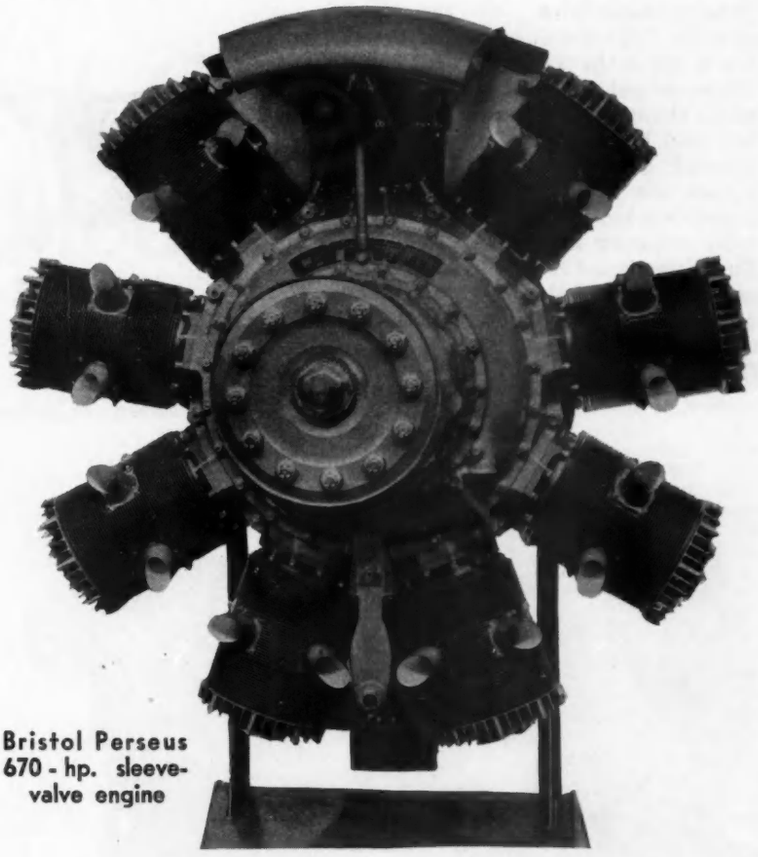
The most notable departures from standard aviation practice were two radial air-cooled sleeve-valve engines on the stand of the Bristol Company. No information whatever is given out regarding the features of their design, but it is assumed that they are of the Argyll single-sleeve type. The smaller of the two engines, the Aquila, has a total piston displacement of 916 cu. in., developing 430 hp. normally and 505 maximum, with a weight of 748 lb. The bigger engine, with a piston displacement of 1513 cu. in., gives 670 hp. nominally and 760 hp. maximum, with a weight of 1014 lb. The engines have very deeply ribbed steel cylinder barrels, alloy heads, a centrifugal type blower and a reducing gear for the propeller. It is stated that they have given very little trouble in their trials, their oil consumption being quite moderate, and that the British Air Ministry is particularly interested in their performance and responsible for the secrecy surrounding them.

While there was no direct preponderence one way or the other, the number of air-cooled engines is greater than at the last previous show, held two years ago. This is due in a large measure to the growth of the inverted sixes- and fours-in-line and V-eights, ranging from 120 to 300 hp.

Outstanding among these is the supercharged six-cylinder Renault which won the Deutsch cup race, limited to engines of not more than 488 cu. in. With six steel cylinders of 109.75 by 140 mm. bore and stroke with an aluminum-alloy head carrying pushrod-operated valves, the



Renault 900-1000 hp. double-row radial air-cooled engine



Bristol Perseus 670 - hp. sleeve-valve engine

Renault has a compression ratio of 6 and develops 300 hp. at 2900 r.p.m. The blower is a geared-up centrifugal type aspiring through a Stromberg carburetor. This engine is fitted with a Ratier all-metal propeller having an automatically variable pitch.

The inverted, in-line, air-cooled engine is as strongly represented in Germany as in France. Argus, of Berlin, showed several models, with four and six cylinders, of this general type, the crankcase being of magnesium alloy, cylinders of forged steel, and heads of aluminum alloy carrying pushrod-operated valves.

The Hirth inverted air-cooled jobs differ in having a built-up crankshaft with roller bearings throughout, and one-piece connecting rods, also with roller bearings. The method of assembly is by means of a ring of 24 teeth cut on each crank arm and on the two ends of the crankpin, held together by means of a bolt, with a special locking device, going through the crankpin. This method of assembly is also applied to the propeller, the locking ring having two lugs, as on the hub cap of an automobile racing wheel, allowing it to be tightened up with a hammer. As a precaution, the lugs are wired to the hub.

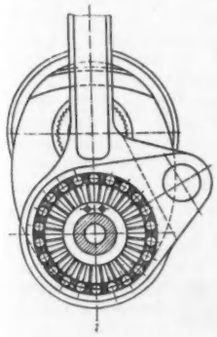
The English Napier Company showed a series of inverted, in-line, air-cooled jobs with six cylinders, and also H-type engines with four banks of four or six cylinders, giving either 16 or 24 cylinders. Two crankshafts are required for the H-type, connected by gearing, which is made use of to gear the propeller down, generally in the ratio of 2.5625 to 1. The biggest of these jobs, the supercharged 24-cylinder model, develops 610-630 hp. at 3500 r.p.m.

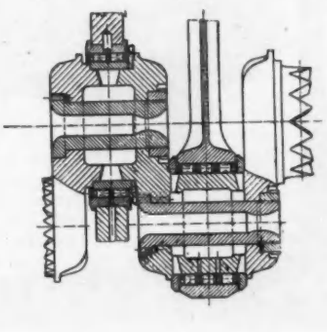
es Show Engines at is Aeronautical Salon

New types of radial air-cooled engines were more numerous than new water-cooled jobs. Hispano-Suiza has brought out a 14-cylinder radial, in two banks of seven, rated at 1100 hp. The Pratt & Whitney Aircraft Company, exhibiting for the first time, displayed their series of Wasp and Hornet models. Two English makers, Armstrong-Siddeley and Bristol, showed air-cooled radials exclusively.

The biggest water-cooled job in the show is the Fiat 24-cylinder, developing 3100 hp. at 3300 r.p.m. and weighing 2046 lb. This is shown in the hydroplane with which Italy recently recaptured the world's speed record.

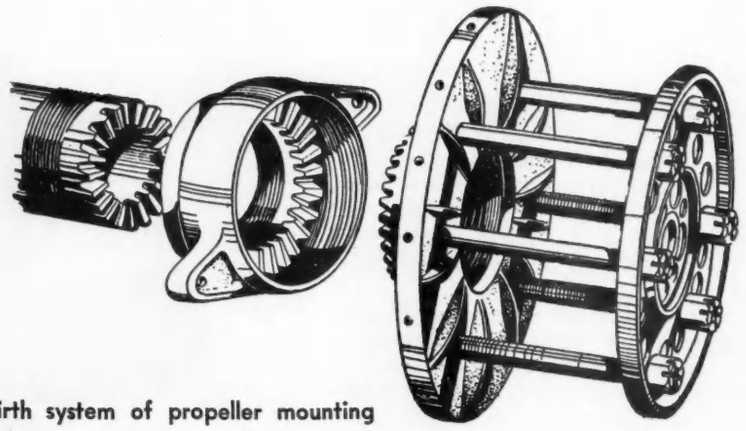
A lot of attention is being given to the elimination, or reduction, of the head resistance of the radiator on water cooled models. On the Fiat record-breaking hydroplane, the radiating surface is composed of flat copper tubes forming an unbroken surface with the wings, the float and the struts. Ethyl glycol, which was looked upon with a certain amount of suspicion when it was first introduced, is now finding much more



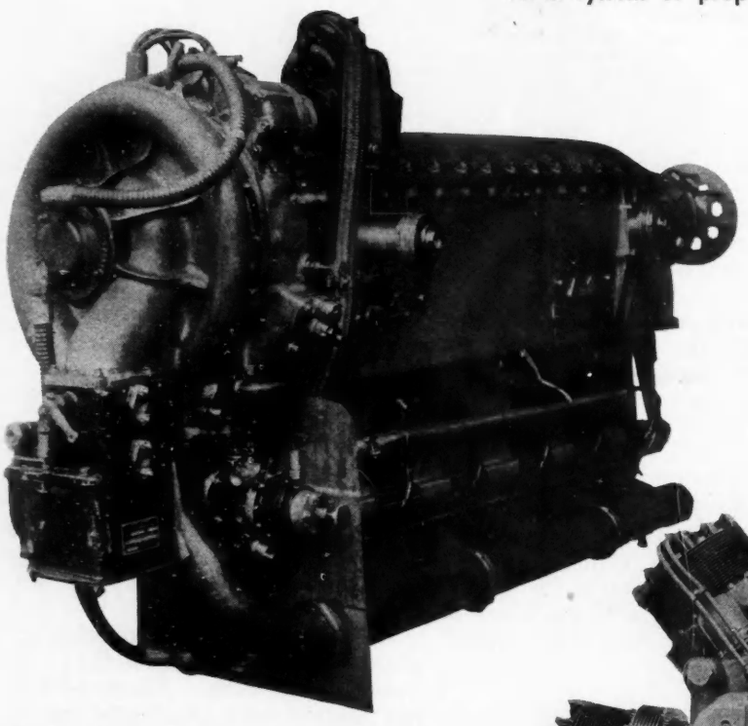


Hirth built-up crankshaft

general application. On the Nieuport No. 122 pursuit plane, the radiator is set in the wing, the heat being dispersed not only by the air passing along the upper surface of the wing, but also by a current of air going through the wing itself. Nieuport makes use of 42 demountable and interchangeable elements, giving a total radiating surface of 918 su. ft. The water is led to a collector on the entering edge of the wing, and there distributed through the various elements, after which it is returned to the engine.



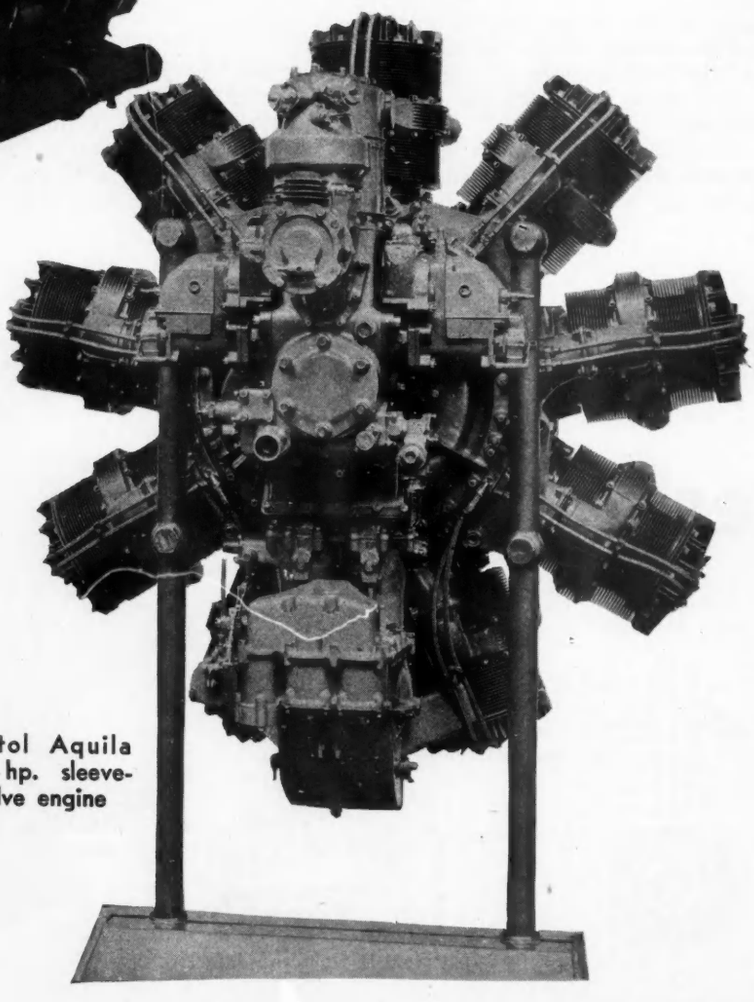
Hirth system of propeller mounting



Renault 220 hp. inverted air-cooled six-cylinder engine with supercharger

A Potez 25 is being fitted with a 635-hp. Renault supercharged engine, which is placed under a cowling similar to that for the in-line, air-cooled models. The radiator is entirely under this cowling, and air entering through an opening behind the propeller is expelled at the rear, below the fuselage. Tests have not yet been completed. The latest Dewoitine high-speed all-metal pursuit plane, fitted with an 860-hp. Hispano-Suiza water-cooled engine, has the radiator in the fuselage, just below and aft of the engine. Shutters allow the correct quantity of air to enter and the discharge is at the rear, just below the gasoline tank, set flush in the floor of the fuselage.

During the last two years there has been a remarkable growth in all-metal construction. On the stand of the Budd Company there is a remarkably fine Savoia-Marchetti hydroplane built throughout of stainless steel under Budd license. This is a four-passenger job, equipped with an Alfa Romeo air-cooled engine. Two French firms are working under Budd license, but apparently have not yet produced their new models.



Bristol Aquila 430-hp. sleeve-valve engine

The Bill of Complaint in the Houde Case

THE United States of America, Complainant, brings this its Bill of Complaint against the above named Defendant and respectfully shows unto this Honorable Court as follows:

I. The Complainant, the United States of America, is a Corporation Sovereign. This cause is prosecuted in its name and on its behalf by George L. Grobe, United States Attorney for the Western District of New York, pursuant to authority thereto granted by Title I of the Act of Congress approved June 16, 1933, known as the "National Industrial Recovery Act," for the purpose of preventing and restraining certain violations of a code of fair competition approved under Title I of said Act.

Emergency Powers

II. This cause is of a civil nature arising under the Constitution and laws of the United States; jurisdiction thereof is given to this Honorable Court by Section 3 (c) of Title I of the said Act of Congress, and by Section 24 of the Judicial Code of the United States.

III. Throughout the United States of America there exists, and has existed at all the times mentioned herein, a wide-spread economic depression and disorganization of industry, including the Automotive Parts and Equipment Manufacturing Industry, which burdens and obstructs commerce among the several States; in order to relieve such burdens and remove such obstructions to the free flow of interstate commerce, the Congress of the United States in the "National Industrial Recovery Act" provided that employees shall have the right to organize and bargain collectively through representatives of their own choosing free from the interference, restraint or coercion of employers, thereby facilitating the amicable adjustment of disputes and promoting agreements between employers and employees, reducing industrial unrest and strikes growing out of the efforts of employees to secure recognition of their representatives and to bargain collectively with their employer, stabilizing wage rates and working conditions in the various industries, and increasing the purchasing power of workers engaged in such industries.

IV. That heretofore and pursuant to the provisions of Title I of said Act of Congress a Code of Fair Competition for the Automotive Parts and Equipment Manufacturing Industry was duly approved Nov. 8, 1933, became effective Nov. 18, 1933, and was amended March 29, 1934, and Aug. 23, 1934; said Code was at all times hereinafter mentioned and still is in full force and effect. Copies of said Code and said amendments are attached hereto, marked Exhibits A-1, A-2, and A-3 and made a part hereof.

V. In accordance with the provisions of Section 7 (a) of Title I of said Act of Congress, the said Code provides in Article VII, Section (1), subdivisions (a) and (b) as follows:

"(a) 'That employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection;

"(b) 'That no employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing;'"

VI. At all times hereinafter mentioned defendant has been and now is a corporation organized and existing under and by virtue of the laws of the State of New York, and is an inhabitant of said State and Western District thereof with its principal place of business at Buffalo, New York, and within the jurisdiction of the United States District Court for the Western District of New York.

VII. At all times hereinafter mentioned defendant has been and now is engaged in the business of the production and manufacture of automotive parts and equipment as described in Article II of said Code, and since Nov. 18, 1933, has at all times been and now is subject to and bound by the provisions of said Code of Fair Competition for the Automotive Parts and Manufacturing Industry.

In Interstate Commerce

VIII. At all times hereinafter mentioned, defendant has been and now is engaged in interstate commerce, said defendant obtaining its raw materials, fabricated parts and supplies in large part from places within the United States but outside of the State of New York, transporting and causing to be transported said raw materials, fabricated parts and supplies from said places to Buffalo, New York, by interstate common carriers, using said raw materials, fabricated parts and supplies to make automotive parts and equipment and thereafter selling, shipping and distributing the greater proportion of said parts and equipment by interstate common carriers to buyers and others located in places within the United States but outside of the State of New York for use in the manufacture of automobiles, all of the aforesaid constituting a flow of commerce and traffic among the several States.

IX. Obstruction of production in the plants in the Automotive Parts and Equipment Manufacturing Industry, including the plant of defendant, interferes with, affects, and obstructs the transportation and delivery of automotive parts and equipment therefrom and interferes with, affects, and obstructs the manufacture in other States of automobiles and on which said automotive parts and equipment are used, thereby affecting the flow of commerce among the several States both in the Automotive Parts and Equipment Manufacturing Industry and in the Automobile Manufacturing Industry, and tending to diminish the amount thereof. The denial by defendant and other employers in the Automotive Parts and Equipment Manufacturing Industry of the aforesaid rights of their employees to organize and bargain collectively tends to and does promote strikes and labor disturbances and obstructs production in the plants of defendant and said other employers and thereby affects as aforesaid the free flow of commerce among the several States.

X. On or about Sept. 17, 1933, certain of defendant's employees formed and thereafter maintained, for the purpose of collective bargaining with defendant and other mutual aid and protection, a labor organization known as United Automobile Workers' Federal Labor Union No. 18839, affiliated with the American Federation of Labor.

XI. On Feb. 1, 1934, the President of the United States promulgated an Executive Order authorizing the National Labor Board to conduct elections to enable employees to choose representatives for the purpose of collective bargaining or other mutual aid or protection. A copy of said Order is attached hereto, marked Exhibit B, and made a part hereof.

XII. Under the provisions of said Executive Order of Feb. 1, 1934, on March 21, 1934, an election was held under the supervision of the National Labor Board of defendant's factory employees to determine their choice of representatives for the purpose of collective bargaining with defendant. A majority of defendant's factory employees eligible to participate in said election voted for United Automobile Workers' Federal Labor Union No. 18839, as represented by Russell Eggleston, Edwin Merkley, Helen Socha, Harold Schmitt, William Stuhlmiller, Harry Bolderson, Frank Jakubiak, William C. Ballstead, Peter Kegler, B. Greger, George MacDonald and Pete George. A copy of the ballot used at said election is attached hereto, marked Exhibit C, and made a part hereof.

Exclusive Representation

XIII. On a series of occasions in 1934, including March 28, 29, and 30; April 7, 14, 21, and 28; May 5 and 19; and June 9, the aforesaid representa-

tives of said United Automobile Workers' Federal Labor Union No. 18839 presented themselves to defendant and its authorized agents and demanded that defendant bargain collectively with United Automobile Workers' Federal Labor Union No. 18839, as represented by them, as the exclusive bargaining representatives of all or any group of defendant's factory employees, concerning questions of wages, hours and other basic conditions of employment affecting defendant's factory employees, and demanded that defendant recognize United Automobile Workers' Federal Labor Union No. 18839, as represented by them, as the only representative so entitled to bargain collectively for all or any group of defendant's factory employees concerning said matters, and demanded that defendant refrain from so bargaining collectively with any other person or organization and more particularly that defendant refrain from so bargaining collectively with a group of its employees known as the Houde Welfare and Athletic Association. Defendant at said times and thereafter, as will hereafter more fully appear, refused then or at any time to accede to any of the said demands, and refused to bargain collectively with United Automobile Workers' Federal Labor Union No. 18839, as represented by the aforesaid persons, as the exclusive bargaining representative of all or any group of defendant's factory employees concerning questions of wages, hours and basic conditions of employment affecting defendant's factory employees.

The N.L.R.B. Order

XIV. Thereafter the Congress of the United States adopted Public Resolution No. 44, which on June 19, 1934, was duly approved by the President of the United States, authorizing the President to establish a board to investigate issues and facts in any controversy arising under said Section 7 (a) of the said National Industrial Recovery Act; and thereafter on June 29, 1934, the President of the United States promulgated an Executive Order under the provisions of the said Resolution and under the "National Industrial Recovery Act" creating the National Labor Relations Board. A copy of said Executive Order is attached hereto, marked Exhibit D, and made a part hereof.

XV. Under the provisions of the said Resolution and Executive Order the National Labor Relations Board assumed jurisdiction over the controversy between the Houde Engineering Corporation and its employees and gave notice thereof to defendant; and thereafter, following a hearing of both parties, the National Labor Relations Board made its decision in the matter in an opinion dated Aug. 30, 1934, a copy of which is annexed hereto, marked Exhibit E, and made a part hereof.

XVI. On Sept. 10, 1934, defendant announced publicly that it refused at any time to bargain collectively with United Automobile Workers' Federal Labor Union No. 18839, as represented by the aforesaid persons, as the exclusive bargaining representative of all or any group of its factory employees concerning matters of wages, hours and basic working conditions affecting defendant's factory employees. A copy of said announcement is annexed hereto marked Exhibit F, and made a part hereof.

XVII. On Oct. 9, 1934, the aforesaid representatives of said United Automobile Workers' Federal Labor Union No. 18839 presented themselves to defendant and its authorized agents and demanded that defendant bargain collectively with United Automobile Workers' Federal Labor Union No. 18839, as represented by them, as the exclusive bargaining representative of all or any group of defendant's factory employees, concerning questions of wages, hours and other basic conditions of employment affecting defendant's factory employees, and demanded that defendant recognize United Automobile Workers' Federal Labor Union No. 18839, as represented by them, as the only representatives so entitled to bargain collectively for all or any group of defendant's factory employees concerning said matters, and demanded that defendant refrain from so bargaining collectively with any other person or organization and more particularly that defendant refrain from so bargaining collectively with the Houde Welfare and Athletic Association. Defendant at said times and thereafter, as will hereafter more fully appear, refused then or at any time to accede to any of the said demands and refused to bargain collectively with United Automobile Workers' Federal Labor Union No. 18839, as represented by the aforesaid persons, as the exclusive bargaining representative of all or any group of defendant's factory employees concerning questions of wages, hours and basic conditions of employment affecting defendant's factory employees.

XVIII. On Nov. 10, 1934, defendant in response to a request in writing by United Automobile Workers' Federal Labor Union No. 18839 to meet its representatives for the purpose of collective bargaining as aforesaid refused in writing to deal with or meet the representatives of United Automobile Workers' Federal Labor Union No. 18839 for such purposes. A copy of said refusal is attached hereto, marked Exhibit G, and made a part thereof.

XIX. Since March 21, 1934, defendant has repeatedly bargained and dealt with the Houde Welfare and Athletic Association concerning questions of wages, hours and other basic conditions of employment affecting defendant's factory employees.

Violation Charged

XX. At all times since March 21, 1934, United Automobile Workers' Federal Labor Union No. 18839, as represented by the aforesaid persons, has been and now is the representative duly designated by a majority of defendant's factory employees for the purpose of collective bargaining with defendant, and as such has been and now is solely entitled to bargain collectively with defendant as the exclusive bargaining representative of all or any group of defendant's factory employees concerning matters of wages, hours and basic working conditions affecting defendant's factory employees.

XXI. By the aforesaid refusals of defendant to recognize United Automobile Workers' Federal Labor Union No. 18839, as represented by the aforesaid persons, the representative duly designated by a majority of defendant's factory employees, as the sole collective bargaining agency of defendant's factory employees on matters of wages, hours and basic working conditions affecting said employees, and by defendant's willful failure and refusal so to bargain exclusively with said union as represented by said persons concerning said matters, and by defendant's bargaining, dealing, and threatening to bargain and deal with persons and organizations other than said United Automobile Workers' Federal Labor Union No. 18839 as represented by said persons concerning said matters, defendant has to the date hereof interfered with, restrained and coerced, and continues to interfere with, restrain and coerce defendant's factory employees in their self-organization and other concerted activities for the purpose of collective bargaining and other mutual aid and protection, and has denied and continues to deny the right of defendant's factory employees to bargain collectively with defendant as aforesaid, in that defendant's conduct as aforesaid tends to and does enable defendant by favoring one organization of its employees at the expense of another to check at will the growth of either organization, to create rivalry, suspicion and dissension among defendant's employees and to maintain permanent and artificial divisions in their ranks, causes defendant's employees to believe that defendant is opposed to their joining the aforesaid United Automobile Workers' Federal Labor Union No. 18839, causes them to fear to join such organization even though they desire to do so, causes these employees who belong to said union to become inactive or give up their membership in said union, and hinders and prevents the making and maintaining of collective agreements between defendant and its employees, all in violation of the provisions of the "National Industrial Recovery Act," and Article VII, Section (1), Subdivisions (a) and (b) of the Code of Fair Competition for the Automotive Parts and Equipment Manufacturing Industry.

XXII. That defendant threatens to continue its violations of said Act and Code in the future, has repeatedly made public and other statements of its intention so to do, on information and belief, will continue such repeated violations unless restrained by order of this Honorable Court, which said order will also prevent a multiplicity of suits in respect to defendant's conduct in the future.

Wherefore since your complainant has no adequate remedy in the premises except in a Court of Equity, and to the end that it may obtain from this Honorable Court the relief to which it is entitled by right and equity, and pursuant to the provisions of Sections 3 (c) and 7 (a) of Title I of said "National Industrial Recovery Act," it respectfully prays:

1. That a writ of subpoena issue herein directed to the above named defendant commanding it on a day certain to appear and full, true and perfect answer to make to this bill of complaint, but not under oath, its answer under oath being hereby expressly waived;

Injunction Asked

2. That this Honorable Court enter a decree directing defendant to meet and bargain with United Automobile Workers' Federal Labor Union No.

(*Turn to page 713, please*)

JUST AMONG OURSELVES

List Prices vs. What Buyers Pay

"THE list price of this car, ready for the road, is $785. This price includes front and rear bumpers, spare tire, tube and lock, and all the costs of delivering it to you in condition for immediate service, *except the cost of shipping it from our factory to where you take delivery.*"

Probably no factory will advertise 1935 prices in this straightforward manner. Instead, in order to minimize advertised list prices, the industry presumably will continue to charge extra for bumpers and spare tires, to make an additional charge for putting a new car into the condition a buyer has the right to expect a new car to be in, and in some cases to tack on a further charge for advertising.

Advertising is intended to inform, but present automobile price advertising falls short of this mark. Buyers have come to know that advertised list prices give only a very approximate idea of what they will have to pay, and it is no exaggeration to say that many of them are suspicious of the real justification for all of the spread between the price they read in the papers and the price the dealer quotes.

The only real variable in the delivered price is freight. All the other elements — the car itself, bumpers, spare tire, tube and lock, conditioning, etc.—can be standardized nationally and included in the list price.

No individual factory perhaps can adopt this policy for competitive reasons. But it should be possible for the industry to cooperate to debunk its pricing practices. Certainly it shouldn't be hard for manufacturers to agree on a definition of a new automobile that is in accord with what buyers think a new automobile is. Certainly, in the buyer's mind, a new automobile is one equipped with bumpers and spare tire, and one that is conditioned ready for service.

* * *

The Profit Dilemma

IF management earns enough profit these days to declare an extra dividend it is criticized by labor for not raising wages. And if it earns the money and doesn't pay the extra, Uncle Sam can step in under Section 105 of the 1934 Revenue Act with a surtax of 25 to 35 per cent on income added to surplus, if the surplus is increased beyond the reasonable needs of the business. "You're damned if you do and you're damned if you don't."

* * *

Odds on Federal Regulation Bills

ODDS quoted by one Washingtonian close to the situation on the prospects for passage of federal legislation regulating motor carriers by the next Congress are as follows:

Even money that bus carriers will be made subject to federal regulation.

Three to one that truck carriers will not be put under federal control other than by code.

We also learn that if regulatory legislation is pushed vigorously, there is a strong possibility that highway transport interests will have their own bill introduced, providing for much less comprehensive control than the Eastman and Rayburn proposals.

Rugged vs. Ruthless Individualism

RUGGED and ruthless are not synonymous, although one might think that they were from the flood of invective that has been directed at rugged individualism in the last year or so. API President Axtel J. Byles emphasized the distinction recently when he said: "The ruthless individual is an enemy of society. . . . There never was a time, however, when, in my opinion, the qualities of the rugged individual were more needed than today."

* * *

THREE hundred and seventy million dollars will be distributed to Christmas Club members within the next two weeks.

* * *

Job Bureaus and Unemployment Reserves

IF unemployment legislation is passed, as appears fairly certain, benefits will be payable to persons unemployed through no fault of their own — in other words, those who are able and willing to work, but can't find a job. In order to administer this provision, a means will have to be provided whereby it can be determined quickly whether the applicant for benefits actually is unable to get work. This means the creation of some sort of system of employment exchanges where employers can list their needs for workers and where workers can list their needs for jobs. These exchanges apparently are an essential feature of unemployment insurance and we mention them here because to date in the discussion of such legislation there has been little consideration of how they would be set up and how they would be operated. Yet obviously this phase of unemployment insurance is one that needs detailed and careful preliminary consideration.—*The Editors.*

Controlling Distribution of Headlamp Rays Gives Better

IN spite of the numerous improvements in headlamp design and headlight control which have been made in recent years, the efficacy of lighting equipment still leaves much to be desired. Of the total flux emitted by the luminous source, a considerable portion is so directed that instead of helping to illuminate the road ahead of the vehicle, it may interfere with the view of the driver under certain conditions and annoy the drivers of oncoming vehicles under other conditions. In this article it is proposed to discuss possible improvements in the distribution of the light rays from vehicle headlamps, and, more particularly, ways and means of dealing with those rays which normally are not intercepted by the reflector but pass from the filament directly into space, though their directions may be slightly altered by the lens through which they are compelled to pass.

Let us first briefly analyze the present conventional automobile headlight. The light rays originate at a white-hot filament and are radiated by it in all directions. However, 40 spherical degrees are blocked off by the bulb base (angle A, Fig. 1). This leaves 320 spherical degrees to be dealt with. How are these 320 spherical degrees now used?

About 105 spherical degrees fall on the upper half of the reflector (B, Fig. 1); likewise, 105 spherical degrees fall on the lower half of the reflector (E, Fig. 1). These 210 deg. of light rays are reflected forward by the parabola and are spread laterally by prisms in the front lens. We have accounted for 250 deg. so far. What becomes of the remaining 110 deg., represented by angles C and D in Fig. 1? Except for the slight modification by the front lens, they are allowed to spread in the form of a 110-deg. cone. The rays which do not strike the reflector (angles C and D), spread almost promiscuously and are therefore called free rays in this article.

What benefit is derived from the 110-deg. cone of free rays? I shall undertake to show that far more harm than good comes from the cone, particularly from the upper half (angle C).

The retina of the eye picks up light signals reflected by distant objects, and the impression is largely due to contrast. Many of these light signals received by the eye are of too low intensity to be measured by a photometer, and the degree of contrast is even smaller.

We expect our eyes to detect a black and gray object on a black road 500 ft. away, or more. Photometrically speaking, the intensity of this contrast signal is nil. One never looks through light into darkness if it can be avoided. Why do we try to look through the ascending rays of angle C in Figs. 1 and 2 in order to receive these faint signals?

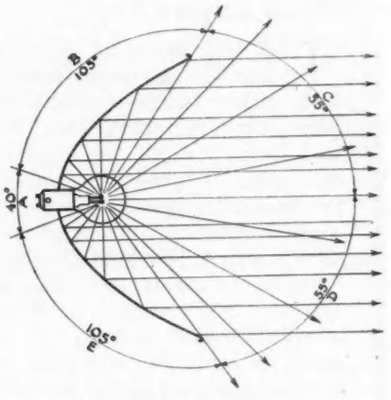


Fig. 1—Light distribution from a conventional parabolic reflector with conventional two-filament bulb

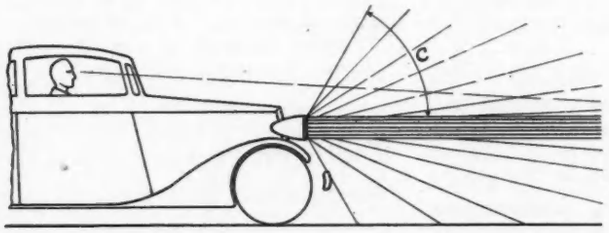


Fig. 2—How the view of the driver is obstructed by the ascending rays indicated by angle C

Fig. 2 shows how the automobile driver looks through the ascending rays indicated by angle C. Fig. 3 shows that the view of the driver is unobstructed when these ascending rays are absent, angle C in this case being reduced to something like 3 deg.

Of what consequence are these ascending free rays? If there is an abundance of reflective material in the air, the intensity of the light reflected by these particles 5 to 10 ft. ahead can be many times greater than that of the faint signal just mentioned. This explains why in fog we can see better without lights than with the lights on. Whenever the reflection from particles in the air exceeds the intensity of the signal you are trying to pick up, you can see only the reflection from the particles. The photometer itself is based on a very similar principle.

When there is sky light not too far above the fog, you can get a faint signal through the faintly illuminated fog with lights turned off. In this case the fog is illuminated from above by rays making an angle of approximately 90 deg. with the free rays C of the headlight. With your lights turned off the white curtain of fog in front is absent, and this is preferable to greater illumination plus the white curtain.

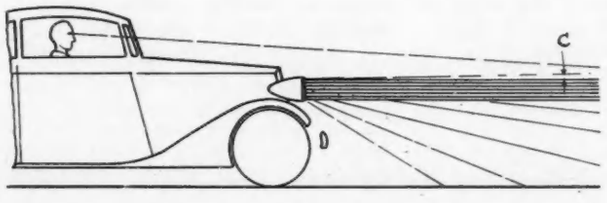


Fig. 3—Obstruction to driver's view eliminated by restricting the upward inclination to 3 deg.

Non-Reflected Road Lighting

by A. Y. Dodge

What is this white curtain and where does it go? It is light from your own headlights reflected by particles of fog in the air. When there is no light to be reflected the white curtain becomes a gray haze. When there are no ascending rays above the horizontal there is no white curtain above the headlights. However, there is always some light rising above the horizontal, even after the free ascending rays of angle C have been taken care of, which is due to scattering of the rays by fog particles. But while the improvement is one of degree only, elimination of most of the free ascending rays greatly reduces the annoyance of this so-called white curtain.

During the past six years I have had many practical experiences along this line. A car equipped with four headlights, two conventional and two of the special type illustrated in Fig. 4, was driven from Grand Haven to St. Joseph, Mich., in a fairly heavy fog. With the conventional lights turned on one could scarcely see. Others were driving with two wheels on the shoulder of the road, some with only the parking lights on, and some flashing the headlights on and off. When the improved lights of Fig. 4 were turned on, the car could be driven at 35 m.p.h. and we could see the edge of the gray-black road 165 ft. ahead, and more, at all times. The distance was judged by the telephone-pole spacing, one and one-half spacings or more being visible at all times. Occasionally I have run into fog banks which I could not see through with the lights here described, but they are quite rare and generally less than a mile long.

In Dunkirk, Ind., while the lenses illustrated in Fig. 5 were being made, we had an experience on dirt roads thickly covered with loose dust. Testing our lights at night, we frequently overtook cars. With our conventional lights turned on we could not see well enough to pass, owing to the reflection from the dust. Upon flashing on the lights shown in Fig. 5 we could see well enough to pass with safety.

There are always some dust particles in the air. When one cannot see a searchlight beam swing, the air is practically free of dust, but such nights are exceedingly rare.

If all the foregoing is true, why haven't headlight designers incorporated the feature described? One reason is that they consider the ascending rays desirable for certain purposes. Besides, they figure that since the free rays from the filament vary in intensity inversely as the square of the distance from the source, these rays soon become very faint and unobjectionable. This, by the way, is a satisfactory explanation of why we can see fairly well with conventional headlights on favorable nights.

An objection commonly made to devices designed to intercept the free rays is that they do not increase the intensity of the main beam and that they are therefore inefficient. While this objection has a basis of fact, it does not warrant condemnation of the devices.

I have run tests in which the free rays represented by angle C were blocked off, and where the efficiency

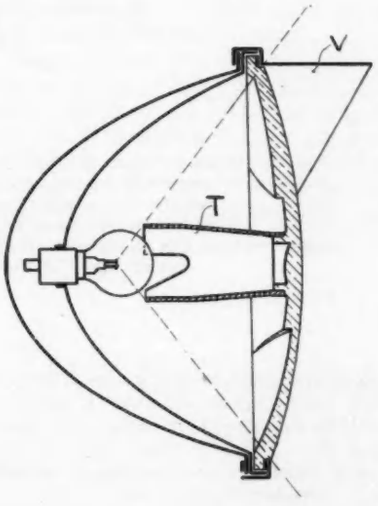


Fig. 5 (Below)—Conventional headlamp and reflector, with a special lens holding a funnel directly in front of the bulb, designed to catch the rays within angles C and D in Fig. 1. The funnel or tube T is cut away on the proper side to let pass a suitable proportion of the ascending and descending rays towards the outside of the car. A small visor V blocks off the ascending rays due to the scattering effect of the lens. For a more pleasing appearance this visor might be made integral with the front door

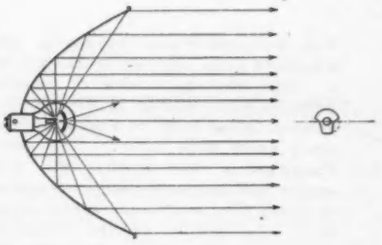


Fig. 4 (Above)—Conventional parabolic reflector with special bulb having a small metal reflector on the inside, supported by one of the terminal posts. The reflector is spherical in shape but has a small center hole and is cut away at the sides to pass some of the ascending and descending rays. The reflector being symmetrical, the bulb can be used in either headlamp. The spherical segment could well be completed as shown dotted for the right headlamp, and similarly for the left. Such bulbs have proven a very satisfactory solution of the problem here discussed

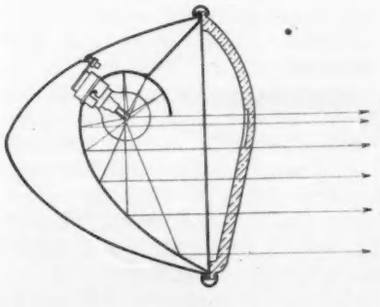


Fig. 6—Headlamp with conventional parabolic reflector for the lower half and a spherical reflector for the upper half. This headlamp held out promise of properly controlling the ascending rays, but the sample built gave too sharp a cut-off and, besides, photometric tests showed that the light flux in the main beam was decreased about 30 per cent instead of being increased 15 per cent. This loss was probably due to the fact that rays reflected by the spherical portion of the reflector are reflected two or more times before leaving the lamp

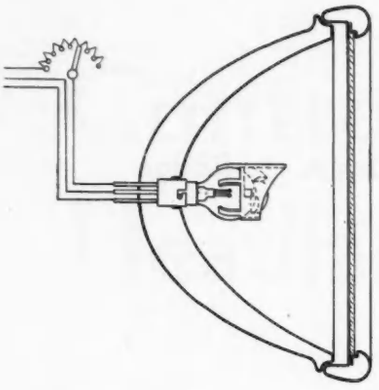


Fig. 7—Conventional headlamp with standard bulb over which is snapped a visor having a lens of special design clearly shown in Fig. 8. Results obtained from this arrangement were quite satisfactory. The chief objection is that neither the bulb socket nor the bulb base is designed to carry the additional overhanging load. By means of the rheostat shown it is possible to vary the intensity of the beam in case of fog, it having been found advisable to reduce the intensity to an estimated 60 per cent of the normal in certain kinds of fog

therefore was zero so far as these rays were concerned. While I do not advocate so crude a solution of the problem, tests have convinced me that even this crude treatment produced a vastly improved driving light on bad nights.

Another objection frequently made is that an absolutely sharp cut-off, with no light rays above the horizontal, is undesirable. Experience shows this to be true, and the point will be discussed later. However, this is not a legitimate objection to the treatment of free rays, because it is not at all necessary that an absolutely sharp cut-off be produced. Other objections to available devices of this type are that they are either too complicated, unreliable, too costly, or insufficiently effective. With these objections before us, let us see what can be done to overcome them.

Why produce parabolic reflectors with such care and inspect them so strictly and then throw away 30 per cent of the available light, at least 15 per cent in a harmful way? The situation becomes worse as the reflector dulls with age.

What are the bases for the objections to a sharp cut-off? One is that dark-clothed pedestrians on wet, dark pavements are too difficult to see when only the legs are illuminated—only the lower part of the figure being illuminated when there is a sharp cut-off. Another is that overhanging loads on trucks at an elevation above the headlight level cannot be seen with such headlights. Besides, the light from lamps with a sharp cut off "dances" more on a rough road than the beam from headlamps with a less abrupt cut off. But these are no reasons for having a large proportion of the total light rise in front of the driver at an angle of 50 or 60 deg. It is not by design that light is thrown upward at such a steep angle, but merely incidental to the general design of the lamp. Ascending rays are desirable, but it would be far preferable if a smaller percentage of the total light flux rose above the horizontal and if the angle of inclination were smaller.

Even with an arrangement designed to meet the above specifications, there remain some ascending rays, due to inevitable scattering by the front lens. For bad-weather driving I prefer to use, in addition to a means for directing the otherwise free rays, a small visor, as shown at V in Fig. 5, to shield the scattered rays.

A word about descending rays may not be amiss at this time. Descending rays at an angle of more than 15 deg. are entirely lost. An excessive amount of light in a downward direction is also objectionable because it is reflected by wet pavements and interferes with the vision of the driver behind the lights as well as with that of the driver of an approaching car.

After testing several lamps with special parabolic reflectors I have come to the conclusion that correct treatment of the free rays not intercepted by the reflector offers the best remaining opportunity for improvement in the headlight field. I am of the opinion that with comparatively little additional effort, an improvement in headlighting equipment can be effected equal to or greater than that which resulted from the change from one- to two-filament bulbs. Visibility can be increased by 300 per cent, in fog, rain and snow, and by 20 per cent on so-called clear nights, and the glare to the oncoming driver slightly reduced at the same time. This, apparently, can be accomplished by modifying the illumination pattern shown in Fig. 9—a typical pattern from a conventional headlight at 20 ft. The dotted line L shows what I believe to be the desirable pattern as regards the free rays direct from the filament. Line K represents the border line of the free rays with present equipment, and this pattern should be contracted to the size and shape outlined by L. This is

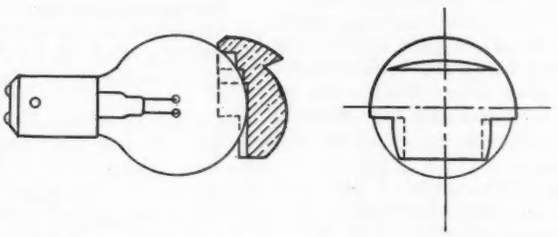


Fig. 8—Standard two-filament bulb to which has been cemented a special lens designed to direct the rays C and D, Fig. 1, forwardly. While these bulbs gave fairly good results, the problem of cementing the lens in place caused difficulties. When the lenses were securely cemented, nearly 50 per cent of the bulbs cracked due to differential heat expansion, and where the bulbs did not crack, many of the lenses eventually separated.

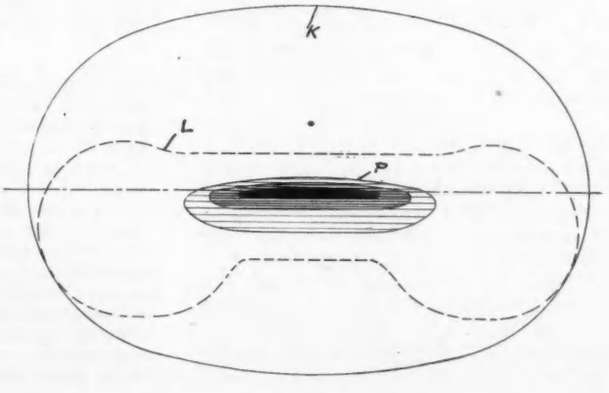


Fig. 9—Typical light pattern from conventional headlamp at 20 ft., particularly as regards the free rays. Dotted line L shows what is considered a desirable pattern for these direct rays. K is the border line of the free rays with a conventional headlamp. Close to the main pattern P the intensity should be about 250 c.p., and it should fade away at the border line (at 20 ft. distance)

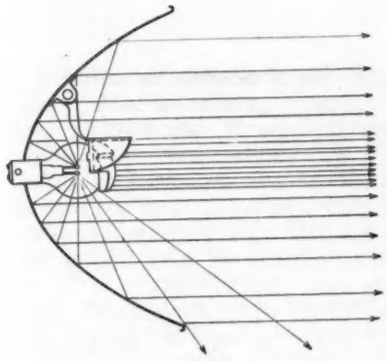


Fig. 10—Modification of the arrangement shown in Fig. 7 in which the attachment is pivotally mounted on the reflector.

particularly important above the horizontal. An intensity of about 250 candle power close to the main pattern P, fading to nil at the border line L when measured 20 ft. ahead of the lamps, seem to be most desirable.

After passing hundreds of unlighted trucks, wagons and cars during the past six years, accidents due to running into the rear of such vehicles are entirely inexplicable to me. Using such lights as described in this article, I have never even come into an embarrassing position of this kind in either good or bad weather.

The various devices illustrated herewith, as well as the diagrams of light distribution, are further explained in the captions appearing underneath the illustrations.

Some of the arrangements illustrated can be suitably modified for use with spot lights or searchlights, to direct or reduce the free rays.

Friction Coefficient Not Constant with Film Lubrication

THE conception of a "coefficient of friction" first originated no doubt as a result of experiments on solid bodies in direct contact, without an intermediate film of lubricant. In socalled dry friction the sliding force required is directly proportional to the pressure between the contacting surfaces, and the coefficient of friction is the ratio of the former to the latter. While the coefficient is not absolutely independent of rubbing speed and surface pressure, it is sufficiently so to be regarded as a property of the surfaces in contact, that is, their material or materials and their surface finish.

This latter relation does not hold in cases where sliding surfaces are separated by a film of lubricant. Instead of being independent of the specific pressure, the socalled coefficient of friction varies inversely as this pressure and is therefore anything but constant. It is, moreover, far more dependent on the characteristics of the lubricating film than on those of the bearing metals. According to the well known formula $f=n\ z/p$, the coefficient of friction varies directly as the speed of rotation and inversely as the specific pressure.

Under these conditions it seems that a "coefficient of friction" is a rather artificial conception and might well be dropped, except, of course for use in cases of dry friction. One good reason for dropping it is that the impression usually prevails that it is constant, or substantially so, while as a matter of fact it varies with every other factor affecting bearing friction. This is apt to give rise to faulty conclusions.

An example in point is the relation between the efficiency of worm gearing and the angle of lead. There is a much-quoted formula which gives this efficiency in terms of the pressure angle, the lead angle, and the coefficient of friction between tooth surfaces. To show the variation of the efficiency with lead angle, definite values are assumed for the pressure angle and the coefficient of friction, the formula is solved for different values of the lead angle, and the results are plotted.

Now, there is nothing wrong with the equation itself; where the difficulty comes in is that if angular speed and torque are kept constant, so that the amount of power transmitted is the same, and the lead angle is then changed, both the rubbing speed and the normal tooth pressure are changed, so that the "coefficient of friction," instead of remaining constant as assumed, will actually change greatly, and the results consequently will be in error.

Instead of the coefficient of friction, the frictional force per unit of bearing surface per unit of rubbing speed should be used as a basic factor in friction calculations. In cases of flood lubrication, or complete-film lubrication, such as we have in all automobile bearings, this is a direct function of the oil viscosity at the temperature of the bearing.—P.M.H.

The Complaint in the Houde Case

(*Continued from page 708*)

18839 as represented by Russell Eggleston, Edwin Markley, Helen Socha, Harold Schmitt, William Stuhlmiller, Harry Bolderson, Frank Jakubiak, William C. Ballstead, Peter Kegler, B. Greger, George MacDonald and Pete George, as the exclusive bargaining representative of all or any group of defendant's factory employees concerning matters of wages, hours and basic conditions of employment affecting said employees, and endeavor in good faith to reach an agreement thereon, whenever a demand for such a meeting and bargaining is made to defendant or its agents by said union through its aforesaid representatives.

3. That said defendant and its agents be enjoined and restrained from meeting and bargaining with any person, persons, organization or organizations other than United Automobile Workers' Federal Labor Union No. 18839, as represented by the aforesaid persons, concerning matters of wages, hours, and basic conditions of employment affecting defendant's factory employees.

4. That said defendant and its agents be enjoined and restrained from interfering with, restraining and coercing, by any manner or means, its employees in their self-organization and in their designation of representatives for the purpose of collective bargaining; and that defendant and its agents be enjoined and restrained from interfering in any way or manner with the organization of its employees known as United Automobile Workers' Federal Labor Union No. 18839.

5. That this Honorable Court grant such other and further relief in the premises as may be just and equitable.

Torrington Closed-End Needle Bushing

Some time ago we illustrated and described in these columns a needle bushing developed by the Torrington Company, Torrington, Conn. The company has now brought out a closed-end bushing as an addition to the line. One end of the steel shell of the bushing is completely closed. Bushings of this type are particularly suited for use on the ends of shafts, as they retain oil and grease better than the regular needle bushing.

The New Equipment P

by Joseph Geschelin
Engineering Editor, Automotive Industries

FREQUENTLY or less frequently, depending upon business conditions, every factory executive makes important decisions concerning the productive equipment in his plant. Can the existing facilities carry the burden of new schedules? Can the old equipment achieve the cost-reducing requirements of new products? Is it necessary to buy new machinery to meet these needs?

On what basis may one judge the adequacy of the old or the potentialities of the new? This is a large question and it is not clarified by the thinking which is based entirely upon the bookkeeping elements of the situation. In fact the so-called "intangibles" may be more important, in certain respects, than the well-known and often quite logical accounting elements.

Sweeping generalizations on this question are as dangerous here as they are in any other business problem. The reasoning that applies to a large production automobile manufacturer may not hold in the case of a parts maker whose product is made in smaller lots and subject to seasonal change. But the philosophy behind the equipment problems of both is practically the same.

For this reason there is a growing tendency to de-emphasize the value of management formulas, whose number is legion in the literature. Thus Paul T. Norton, Jr., of the Virginia Polytechnic Institute, in his recent paper, "The Selection and Replacement of Equipment," proposes the consideration of a *list* of the tangible factors (to assure consideration of all important elements) rather than a formula that might fail because of its complexity.

Prof. Norton stresses this point—that no manufacturer can afford to invest his money in new equipment unless he can be reasonably sure that it will earn a reasonable return. What is a reasonable return? Opinions will vary but it has been said by many shrewd business men that the right kind of equipment will earn more than any other safe investment known in the business world. Need we point in this connection to the earning capacity of the machinery used in the production of the Ford, Plymouth, Chevrolet and other cars.

However, opinion is divided on the very fundamentals. For example, shall we calculate the value of a new machine on its ability to cut direct costs only or must we consider many other things that contribute to the situation? Perhaps both points of view are right under the proper circumstances. If a machine is required for a great volume of production and if its life is estimated to be only one or two years, it usually does justify its keep on the basis of direct labor saving. But the machine that is amortized in five or ten years must be judged by other criteria.

Some accountants can prove to their satisfaction—and sadly enough, to the satisfaction of those who hold the purse strings—that replacement of general purpose equipment is seldom justified. To them the machine is a physical asset representing a tangible book value while its condition is a matter of little importance. To the practical man this reasoning is maddening. Where does the accounting expert take care of the "intangible," of obsolescence, of technological improvement?

What the intangibles are, we shall show briefly; how they may be evaluated, we prefer to leave to the judgment of the individual executive. A few of the intangibles are:

1. Need for new standards of quality and surface finish that may not be met by the old machinery. If the old is retained, either quality or cost suffers through added finishing operations.

2. What is the history of the old machine with respect to scrap, rejects, need for close inspection, etc? How much of this will disappear with the new installation?

3. What is the maintenance history of the old machine? If the true figures can be separated from the general overhead account, they might prove somewhat surprising.

4. What economies will result from the use of new cutting tools such as Stellite and the various grades of the cemented carbides? The full benefits of such tooling can be realized only with modern machinery capable of high speeds and feeds and great rigidity.

5. What of competitors? Can their costs be met or beaten with modern equipments?

So much for the intangibles, except for the philosophical reflection that sometimes the choice between keeping the old and investing in the new may mark the difference between staying in business and dropping by the wayside.

Perhaps the biggest obstacle to progress in the factory is the accounting procedure that imposes an arbitrary depreciation rate without regard to the actual earning capacity of the machine. In too many cases the machine that has been selected because of its ability to amortize its cost in two or three years is depreciated at only 10 per cent on the books. The enervating effect of this is that it sets a fictitious book value on the machine and then declares that new machine can justify itself only if it can pay off the book value plus the other fixed charges.

Age of equipment, so far as useful life is concerned, cuts no ice, in our opinion. However, based on the findings of many experts in the field, it can be said that the age of a machine should be used as a danger signal. Any time a machine is ten years old or over, it should be the object of suspicion and made to prove that it isn't losing money for the company. We know of many cases where equipment only six months or a year old has been summarily scrapped to make way for the new; we also know of cases where very old machines are still justifying their existance. Not generalization but common sense and a knowledge of the operating conditions will give the true answer.

On occasion we have visited plants using very old equipment which was supposed to be yielding phenomenal economy. Question is—do they really

t Problem

A discussion of the factors which must be considered by factory and front office officials if sound decisions are to be made on machinery buying problems

have the true picture of the productivity of the machine as well as its overall cost of operation? Since the company may be losing ground on its production costs, if the assumed costs are in error, it is important to be sure that the figures are right before concluding that the new machine offers no advantage.

In general we may say that equipment best suited to automotive manufacturing comes from one of three categories:

1. Single purpose type for large volume and seasonal set-up. This type must pay for itself quickly out of savings in direct labor, although even here the machine is frequently chosen because of the need for a special cycle or a special process regardless of operating economies.

2. Unit type machines capable of great volume but making possible more frequent changes in tooling and set up. This type is widely used in automobile production and offers great potentialities in parts manufacture. The advantages of such equipment lie in its compromise between the simple general purpose machine and the inflexible single purpose machine; also the ability to accommodate products of entirely different design without excessive additional investment in tools and heads.

3. General purpose equipment has wide application in the automotive field for tool room production, for manufacturing tool rooms, experimental shops, and at present as the main equipment in most parts plants. In justifying the purchase of equipment of this type, which is amortized over a relatively long period of years, it is important to stress an entirely different set of conditions. New items in this category offer greater rigidity, higher speeds and feeds, and a high order of precision compatible with the use of the new cutting tools. While direct labor savings are not as pronounced as with unit-type machines there is a new order of economy and a general simplification of control functions all aiding the economy picture.

Let us now consider what is perhaps the controlling element in the whole equipment situation. If and when a replacement of the old or the addition of new facilities is indicated, where is the money coming from? Production men will tell you that this is the real stumbling block to modernization.

When the question arises, it is most difficult to convince the exchequer that equipment needs should take precedence over other vital expenditures. Eventually the fiscal management of the company will have to concede that the production department is the source of cost-economy and that the mere presence of physical assets is not sufficient to assure the continued enjoyment of its market. Some way will have to be found to show on the books of the company that every sales dollar represents a certain amount of profit that must be credited to the depreciation account of the machine.

One of the most valuable contributions along these lines has been a clarification of the sinking fund problem. For a long time it has been evident that it would be most difficult to convince management of the practicability of setting aside earmarked funds for machinery purchases. While such funds are most desirable from the viewpoint of the factory, they have certain drawbacks which need not be discussed here.

A practical compromise is to set aside each year a certain amount of funds for the acquirement of equipment, to be used only when justified. This means that on occasion no money will be used for this purpose although the progressive manufacturer will hardly let the occasion pass without buying some equipment. To assure such a fund it is proposed that the company include a machinery account in the general budget.

If this arrangement were to be adopted, its greatest virtue would be the tacit recognition on the part of management that factory equipment is a live budget item as vital as advertising, sales, or service.

NEW DEVELOPMENTS
Automotive Parts, Accessories and Production Tools

High-Speed Tube Bending Machine

Following the announcement of the line of high-speed tube bending machines for tubular auto seat frames (*Automotive Industries*, April 21, 1934) Williams, White & Co., Moline, Ill., has added a line of universal bending machines capable of handling any type of bend in tubing.

All moving parts are hydraulically operated with bending pressure applied directly to the cast steel swinging arm. The clamp is of toggle type and holds the work for either right or left bends. The table is dropped in front so that short bends can hang down, making it unnecessary to change the machine from right to left on many jobs.

The bending dies work either right or left-hand, by turning them over right to left, and if it is desired to pull the mandrel through the tube instead of the tube off the mandrel the die is turned off over front to back.

An adjustable automatic stop and graduated table front cuts set-up time to a minimum. It is located just in front of the operating valves and has both limits (180 degrees) set permanently and extra collars on both sides are adjustable to set the swinging arm to stop at any degree of bend under 180 degrees, either right or left.

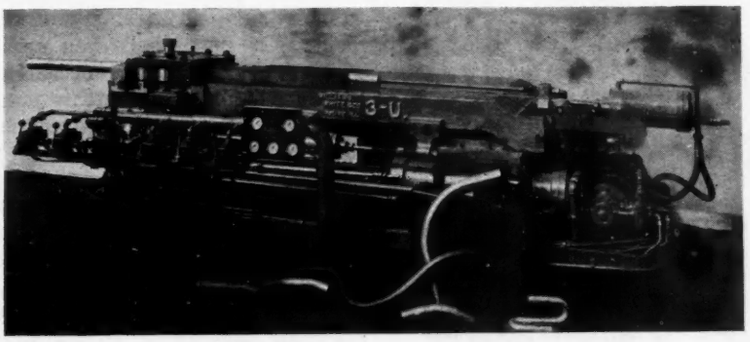
Universal benders are built in the following sizes:

1¼-U up to and including 1¼ in. tubing, 3/16 in. wall, 6 in. radius.

2-U up to and including 2 in. tubing, 3/16 in. wall, 8 in. radius.

3-U up to and including 3 in. tubing, ¼ in. wall, 12 in. radius.

4-U up to and including 4 in. tubing, ¼ in. wall, 24 in. radius.



Detroit Electric Melting Furnace

An electric melting furnace recommended for experimental and test runs with automatic rocking device has been announced by Detroit Electric Furnace Company, Detroit, Mich. This unit, Type GM, has been engineered to increase the angle of rock of the furnace shell automatically. The rate of increase may be changed—one rate being available for ferrous and another rate for non-ferrous materials. It is equipped with a special transformer and control panel. An oval shaped door is used instead of the square door.

A feature of the rocking mechanism is that the shell velocity is zero at the point of reversal—despite the constant speed motor. This innovation makes for a quiet, smooth running machine. The shell is positively timed by a gear to the reversing mechanism.

New Stackbin Units Offered

The Stackbin Corp., Providence, R. I., has added to its line of stacking devices, the Stackrak, a single unit made of channel and angle steel construction, solidly welded. A lip running the entire width hooks under at the back and a close fitting channel at the front completes this efficient, yet simple lock.

Stackracks are made to order for cardboard, fibre, wood or steel boxes, of any size. The size of channels, angles, etc., is governed by the weight of material in the boxes, which also governs the price.

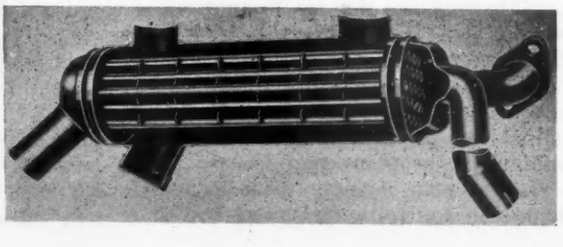
Ignition Welding Timer

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has just announced the details of a portable Ignition Welding Timer for accurate timing of all types of resistance welding machines. It is said to be so accurate in timing that it will pass electrical current for periods as short as one cycle (1/60 second) and is adjustable up to 30 cycles (½ second). Accurate timing has been found to be important in the fabrication of aluminum, aluminum alloys and high strength steels.

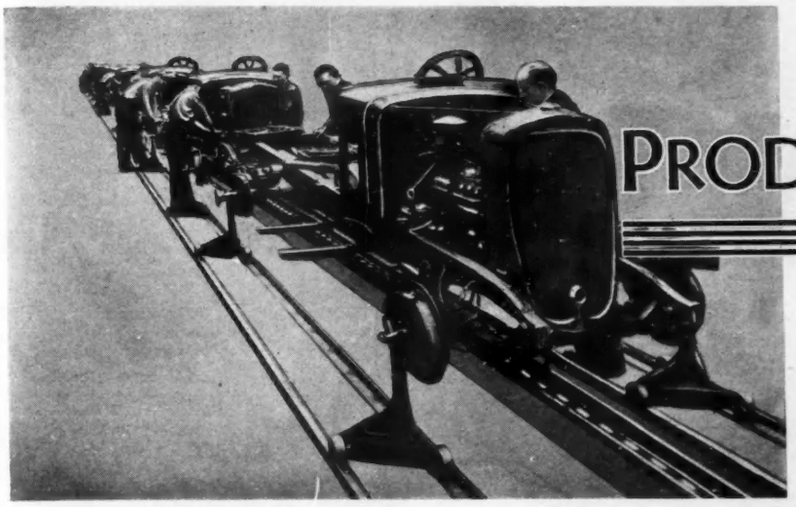
Outside of its electrical advantages, it is light in weight and small in dimensions so as to be readily portable—it is only 46 in. high, 42 in. long and 29 in. wide and weighs approximately 700 lb. A unit of this size will carry electrical energy in magnitudes as high as 700 kv-a., 440 volts single phase.

Ford Fresh-Air Heater

A heater for Ford 1933 and 1934 V-eights has been made available to users by the Ford Motor Co. It comprises two tube plates or headers connected by 25 tubes 13 in. in length, through which the hot gases from the engine exhaust are passed. The assembly of tubes is enclosed in a sheet metal housing through which fresh air is blown by the radiator fan. The tubes have a total heating surface of 500 sq. in. From the housing of the heater connection is made to a register which is installed in the right dash wall, in front of the front-seat passenger. The heat supply may be regulated or shut off completely by means of a button controlling a valve in the intake pipe, which button can be operated with the foot. The heat supply can be directed to any part of the front compartment, and provision is made also for the installation of a second heat register in the floor of the tonneau if desired.



Ford heater for 1933-1934 V-eights



PRODUCTION LINES

Good Stuff

Several days ago we visited with the cutting oil specialist of Socony-Vacuum. There's a chap who has lived and breathed cutting oils for so many years that he seems to know the answers to all the questions. In fact, although his department is relatively an infant in years, it is already well intrenched in a number of good automotive plants. What we started to say was that Socony-Vacuum has been distributing a little manual entitled, "Lubricants and Coolants for Metal Cutting." If you know about it, forget that we mentioned it, but if you don't know about it be sure to ask us for a copy. The virtue of the booklet lies in its simple language. It discusses metal cutting, the requirements of metals, particularly the automotive alloys, and touches upon various metal cutting operations. In addition it gives some tangible recommendations as to the kind of cutting fluids to use for different conditions. Get your copy now.

Five Per Cent Tax

Anything that might result in a tax of five per cent of your payroll would arrest your attention, no? Well, one of the plans for Unemployment Reserves contemplates just that. Social legislation unquestionably will steal the show during the coming sessions of Congress and state legislatures. Industrial leaders conscious of their responsibility are beginning to study the matter of unemployment reserves and the effect of legislation to that end. Comes now the Retail Merchants Commission headed by Samuel W. Reyburn with a little bulletin, a catechism on Unemployment Reserves. It covers a study-outline of the subject with pertinent questions and list of excellent references. Previous history of such plans in Europe, possible trend of legislation in this country, etc. We'll be glad to get a copy for your use.

Closed Meeting

Just a word to our friends in Cincinnati. The MAPI meeting which brought together the largest gathering of industrialists in a long time, was closed to all but members of the Institute. That's why we have no comments to make concerning its deliberations.

Smaller Size

As something new in spectrographs, Bausch & Lomb has introduced the small Littrow Spectrograph for industry and education. It has moderately high dispersion with small resolving power and is offered at a very low price. Its range is from 2100 to 7000 Angstrom units which covers simple spectra, especially the non-ferrous metals.

Color Standards

A two-volume Dictionary of Color Standards, showing 220 colors in constant demand, to be used as a basic standard range of colors distinct from seasonal fashion ranges, has been issued by the British Color Council. The colors are shown on pure silk ribbon, with both a mat and a shiny surface, each color accompanied by its name, number, and code designation. A history of each color, with the various names by which each has previously been known, is included.

Needs Cleaner

A man who has built some successful rear-engined vehicles told us of a fundamental problem that may escape attention. We refer to the fact that the rear engine location puts the power plant right in the midst of the greatest flow of dust and dirt. And this has given no little trouble to those who have been building such cars in Europe. It has been necessary to change the location of the breather as well as the method of breathing. But in the final analysis, it is essential to protect the carburetor intake with the most efficient air cleaner that the market affords. This means the installation of the kind of air cleaners used on good agricultural tractors.

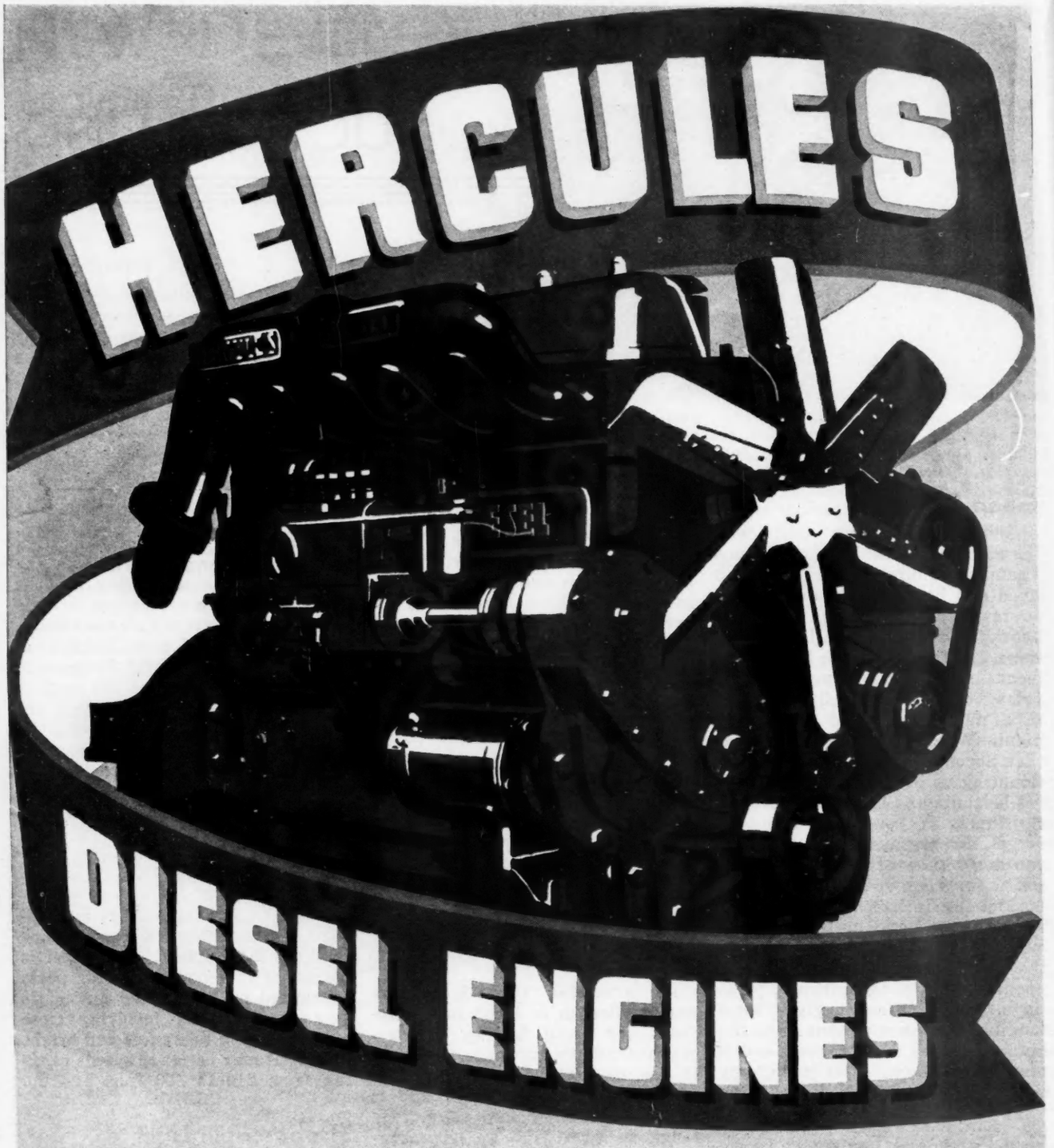
Ultra Cut

—is the trade name of free-machining screw stock steel which is made by Bliss & Laughlin. The steel is particularly recommended for parts fabricated on high speed automatic screw machines, involving close manufacturing tolerances and bright finish. It may be cut at speeds ranging from 210 to 300 fpm. and up.

Stroboscopic Light

Franklin Institute in Philadelphia has scheduled a very interesting lecture for Thursday Dec. 13 by Harold E. Edgerton of M.I.T. The subject "Stroboscopic Light and Its Uses" is one of great interest to automotive engineers. We shall try to attend and give you a brief report.—J. G.

MANUFACTURING MANAGEMENT METALLURGY



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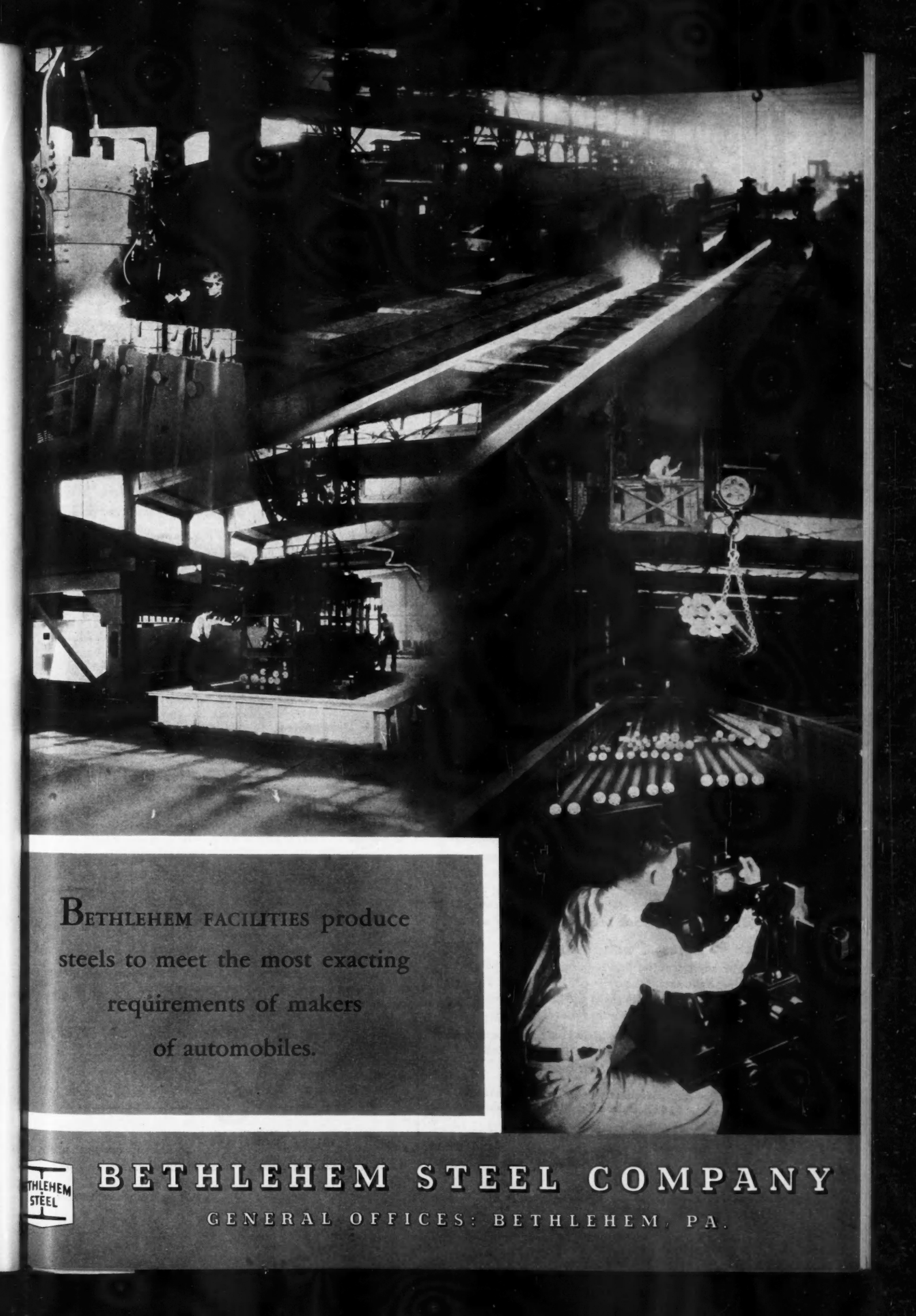

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